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NATURAL HISTORY.

THE
LONDON NATURALIST

The Journal of the
London Natural History Society

FOR THE YEAR
1930

PRICE THREE SHILLINGS

PUBLISHED BY THE
LONDON NATURAL HISTORY SOCIETY,
THE LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE,
KEPPEL STREET, GOWER STREET, LONDON, W.C.1.

L. Reeve & Co., Ltd., Ashford, Kent.

1931.

London Natural History Society.

Founded 1858

Honorary President:

The Right Hon. the Viscount Grey of Fallodon, K.G., P.C.

Honorary Vice-Presidents:

Prof. M. Greenwood, D.Sc., F.R.S., F.R.C.P.; F. J. Hanbury, F.L.S., F.E.S.; L. B. Prout, F.E.S.; J. Ross.

OFFICERS FOR 1930.

All Offices in the Society and its Sections are Honorary.

President:

L. J. Tremayne, F.Z.S.

Vice-Presidents:

E. B. Bishop; E. A. Cookayne, M.A., D.M., F.R.C.P., F.E.S.; W. E. Glegg, F.Z.S., M.B.O.U.; A. W. Mera; R. W. Robbins; R. Marshman Wattson.

Director of Sectional Organisation:

J. E. S. Dallas.

Treasurer:

F. G. Dell, 55 Russell Road, Buckhurst Hill, Essex.

Librarians:

R. W. Pethen and E. Mann.

Curators:

P. J. Hanson; E. A. Aris, F.Z.S.; H. Spooner; W. C. Forster.

Secretaries:

A. B. Hornblower (General Secretary). 91 Queen's Road, Buckhurst Hill, Essex; H. J. Burkill, M.A., F.R.G.S. (Minuting Secretary); J. B. Foster, B.A. (Syllabus Secretary); C. S. Bayne (Publications Secretary and Editor).

Members of Council:

S. Austin, F.Z.S.; W. C. Cocksedge; C. L. Collenette, F.R.G.S., F.E.S.; L. Parmenter; J. C. Robbins, F.E.S.; J. Ross.

Lanternists:

H. J. Hussey; H. A. Littlejohn; B. T. Ward; C. Weeks.

The Society is affiliated to the South-Eastern Union of Scientific Societies, the National Trust, the Commons and Footpaths Preservation Society, and the Federation of Rambling Clubs.

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BRITISH MUSEUM NATURAL HISTORY

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BRITISH
MUSEUM
29 JUN 31
NATURAL
HISTORY.

Editorial Notes.

AT the end of 1930, Mr C. S. Bayne resigned from the office of Publications Secretary and Editor, which he had held since 1923. The Society is deeply indebted to him for the time and care that he devoted to the production of the *London Naturalist* during these eight years, and the Council has shown its appreciation of the services that Mr Bayne has rendered by electing him a Vice-President of the Society.

The Publications Committee thanks those members of the Society whose assistance has made the issue of the present volume possible. The Society is not yet in a sufficiently strong financial position for the cost of printing the *London Naturalist* to be borne entirely, or even mainly, by the general funds, and we are thus obliged to rely on the generosity of individual members to maintain the prestige of the Society's Journal.

It will be noticed that no supplement of Botanical Records of the London Area is published this year. The next part of these records will include two difficult and " critical " genera, the Brambles and the Roses. Although much material is available, it is felt by the Editors that another season's study ought to be given to these groups, particularly in the northern half of the area, before an attempt is made to illustrate the distribution of the micro-species and forms of *Rubus* and *Rosa*. Our earlier recorders mostly left them severely alone. Records, accompanied by specimens when any doubt is present, would be much appreciated during the coming season. Leaf and a portion of stem of the year, as well as flowers or fruit, are necessary for identification. Brambles should be sent to Mr R. W. Robbins, Roses to Mr E. B. Bishop.

Members are invited to submit to the Editor, as early as possible, notes and papers intended for publication in the *London Naturalist* for 1931. The early receipt of manuscripts for inclusion in the annual volume is of great assistance to the Publications Committee.

In the course of the year, the Society became affiliated to the National Trust for Places of Historic Interest and Natural Beauty. By the terms of the affiliation, the Society undertakes to draw the attention of the National Trust to any open spaces, buildings, etc., within the Society's area that may need protection from needless spoliation. A small committee, consisting of members of the Archaeological and Ramblers' Sections, with Mr W. C. Forster as Secretary, has been appointed to deal with such matters. Members are earnestly requested to communicate at once with Mr Forster if any cases of possible or threatened spoliation come to their notice.

The affiliation of the Society to the National Trust was dealt with in the valuable report of the Director of Sectional Organisation, Mr J. E. S. Dallas, which was presented to the Council, and subsequently read at the Annual Meeting on 2nd December 1930. Another important matter discussed by Mr Dallas in his report was the possibility of forming new Sections in the Society. On this subject Mr Dallas wrote as follows:—

"The question of new Sections has been considered, and I have made specific enquiries among members regarding two subjects, viz., (i) Fish and Aquatic Life, and (ii) Mammals. In my view, the essential in forming a new Section is either someone with great enthusiasm for the subject who can and will infuse that enthusiasm in others and will organise the new Section; or, alternatively, a large body of members keen on the subject, from amongst whom it would be easy to find individuals to officer the new Section. In neither of the two cases have I found either requisite."

Mrs H. Boyd Watt was the Society's delegate to the 35th Congress of the South-Eastern Union of Scientific Societies, held at Portsmouth in May 1930. Mrs Boyd Watt made a valuable report to the Council, which was placed before the Society at the Annual Meeting. Suggestions made in this report for closer co-operation between the Society and the Union are being carefully considered by the Council.

ANNUAL EXHIBITION.

The Annual Exhibition was held on 4th February, when the two halls in Winchester House were filled with exhibits, staged by twenty-three members and by the various Sectional Committees. The Ornithologists again arranged an instructive display, including specimens shown by Mrs Boyd Watt, the Misses C. M. Acland, C. Lister, and A. Hibbert-Ware, and Messrs W. E. Glegg and A. Richardson. Entomology was represented by Miss M. Main and Messrs E. A. Aris, A. W. Mera, A. Richardson, R. W. Robbins, C. Bramwell Smith, G. Talbot (on behalf of Mr J. J. Joicey), and C. H. Williams. For Botany, Mr H. Spooner displayed a large number of Bible plants and their products; Mr R. W. Robbins a number of pressed specimens of rare British plants; Mr J. C. Robbins some living Swiss specimens; and Mr B. T. Lowne a number of living plants from his garden. Messrs J. Ross and H. J. Burkill showed specimens of Plant Galls; Mr P. W. Horn a small Sturgeon; and Mr A. J. Mason a series of photographs of Surrey Churches. There were other specimens on the tables, but no records were handed in by the exhibitors at the time.

BIRD PICTURES.

Mr Roland Green's fourth annual exhibition of bird pictures, which was held at the Ackermann Galleries, New Bond Street, in November, provided an abundance of interest and beauty. Mr Green has always had a particular talent for portraying birds in flight, and his "White-fronted Geese—Heavy Sea," "Wigeon coming in," and "Mallard getting up—Hickling" are good evidence of this. Mr Green has profited by a visit to Holland, as shown by the picture, "Avocet Sanctuary, Holland," in which those rare visitors to England are shown in their breeding quarters.

ANNUAL DINNER.

The Fifth Annual Dinner of the Society was held on 11th March at the Holborn Restaurant, when seventy-four members and visitors were present. The chair was occupied by the President, who had invited as guests of honour the late Sir Andrew Balfour (Director of the London School of Hygiene and Tropical Medicine) and Mr H. W. Andrews (Acting President of the South London Entomological and Natural History Society). Speeches were made by these three, and by Messrs J. B. Foster, W. E. Glegg, and S. Austin. The lighter vein was furnished by Miss T. Hutchins at the piano, Miss V. Purry with recitations, and Miss R. Pountney with songs.

Papers Read to the Society.

THE list of papers read at the meetings held in 1930 is given below. We here desire to express our indebtedness to those visitors, Dr R. N. Chrystal, Messrs W. G. Freeman, H. R. Hewer, and E. R. Taylor, and Professor A. Thomson, who very kindly came to lecture to us.

Jan. 21—" Trinidad," .... W. G. Freeman, B.Sc., F.L.S.

Feb. 4—Annual Exhibition.
(1) " Some of My Eight-legged Friends," ... Miss M. Main.
(2) " Some Tiny Factory Employees," ...... G. E. S. Bullard.

Feb. 18—" The Colour of Fish and How they Change It,"
H. R. Hewer, A.R.C.S., M.Sc., D.I.C.

Mar. 18—" The Pecten of the Bird's Eye,"
Prof. A. Thomson, F.R.C.S., LL.D., D.C.L.

April 1—" Red and Grey Squirrels," .... A. D. Middleton.

April 15—Bacot Memorial Meeting.
" Some Aquatic Insects," ...... Ray Palmer, F.E.S., F.Z.S.

May 20—Discussion on " Parasitism in Nature,"
opened by J. B. Foster, B.A.

June 3—" The Pyramids and the Sphinx," ...... E. R. Taylor, F.S.A.

June 17—" A Londoner's Memories of Bird Life," ...... R. W. Pethen.

Oct. 7—" Some Insect Wood Borers and their Parasites,"
R. N. Chrystal, M.A., D.Sc.

Nov. 4—" Some Races and Ruins of the Far East,"
Miss C. E. Longfield, F.E.S., F.R.G.S., F.Z.S.

Dec. 2—Annual General Meeting.
President's Address—
" The Unseen Will," .... L. J. Tremayne, F.Z.S.

PAPERS READ AT SECTIONAL MEETINGS.

Jan. 7—Entomology. "Recollections of Lyndhurst Thirty Years Ago," .... R. W. Robbins.
Ornithology. "Birds of the Harrow District," T. H. Harrisson, M.B.O.U.
Mar. 4—Archaeology and Ramblers. "Rambles in Surrey," A. J. Mason, F.R.S.A.
May 6—Plant Galls. "Some Aphid Galls," H. J. Burkill, M.A., F.R.G.S.
Botany. "An Amateur's Observations on Umbelliferae," L. G. Payne.
Oct. 21—Ornithology. "Birds of the Pembrokeshire Coast," J. G. Marshall.
Plant Galls. "Dipterous Galls," .... M. Niblett.
Nov. 18—Archaeology. Discussion on Records.
Botany. "Grasses," .... R. W. Robbins.
Dec. 16—Entomology. "Insect Eggs: how and when laid," M. Niblett.
Ramblers. Discussion on the Effects of Modern Developments on the Countryside. ...... opened by A. Capleton.

Council's Report, 1930.

THE year 1930 must be recorded as another prosperous one for the Society; every branch has shown increased activity, and excellent results in research and records have rewarded the various sections. The membership has increased, the total number of new members being 31; unfortunately we have to set against this the unusually large diminution of 20. Of the losses, four were due to death, one of these being our esteemed Vice-President, Mr A. W. Mera, who was one of our oldest members, having joined in 1887. His loss is very much felt.

The number of Associates has remained nearly level, the Branch having a net decrease of one only, and the Country and School of two, one of whom, again, was a very old friend of the Society, Mr Walter C. Grubb, one of the original founders of the old "North London" Society; his death is deeply deplored.

During the year, the headquarters were removed from Winchester House to the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1, where much more convenient accommodation is available, and the whole atmosphere is more congenial to the pursuits of the Society.

Attendances at indoor meetings have been rather lower for the whole year, but since the removal they have improved, the figure for Winchester House having been 44.2 average, and that for Keppel Street 69, giving a total average for the whole year of 47 at General Meetings. At Sectional Meetings attendances were higher than for the previous year.

The high level of the Syllabus has been well maintained by Mr J. B. Foster, who has once more succeeded in arranging a thoroughly comprehensive and attractive set of fixtures.

Reflected honour has fallen upon the Society through one of its Country Associates, Professor Sir F. Gowland Hopkins, who has been elected President of the Royal Society.

The Library has increased in popularity; the Librarians had a heavy task in re-arranging the books, etc., after removal, but they displayed their usual industry, and the whole is once more in perfect working order, and being considerably more used than it was at the old premises.

The Council is once more indebted to the anonymous lady who has again materially helped the Secretary by addressing envelopes, etc., when the whole membership had to be reached. This is now no light task, as the total is nearly 350, and four sets are needed.

The Treasurer, as will be seen elsewhere, has a highly favourable report to show, our income is over 100 guineas, and despite unusual extra expenses, the Reserve Fund has risen to £50, while the Life Composition Fund has reached £75. The "London Naturalist" Fund did not meet its expenses by about £12, which is perhaps not surprising seeing what an exceptionally full and comprehensive number was published; the deficit has been met out of the Society's annual income.

Finally, the Council would impress upon members once more the urgent desirability of (1) recording their observations with our recorders; (2) attending the meetings, and using yet more fully the Library and Collections, which are now so much more readily available; and (3) introducing more new members—thus leading our future to yet greater success.

A. B. HORNBLOWER, *Honorary General Secretary.*

STATEMENT OF ACCOUNTS 1930: GENERAL ACCOUNT.

Balance, 11th November 1929, ...	£59 12 8
Interest on Deposit Account, ...	0 19 4
Interest on Post Office Account, ...	0 11 0
Interest on £50 War Loan, 1929-47, 5 per cent., ...	2 10 0
Sale of Library Duplicates, ...	2 15 0
Subscriptions and Entrance Fees, ...	99 1 0
	£165 9 0

Rent, ...		£30 15 0
Syllabus Expenses (Printing and Postage), ...		6 6 7
General Printing and Stationery, ...		7 16 7
Chingford Branch Expenses, ...		4 8 2
Postages (Secretary), ...		5 17 0
Postages (Treasurer), ...		1 13 6
Postages (London Naturalist), ...		5 4 3
Supplement to Library Catalogue, ...		2 2 0
Deficit on Annual Dinner, ...		0 0 9
Exhibition Expenses, ...		1 13 10
Binding Periodicals, ...		0 15 0
Insurance, ...		0 17 6
Removal Expenses, ...	£9 19 9	
Less Donation, ...	0 5 0	
		9 14 9
Gratuities, ...		0 12 6
Subscriptions—Federation of Rambling Clubs,	£0 7 6	
British Birds Marking Scheme, ...	0 15 0	
Entomologists' Monthly Magazine, ...	0 15 0	
South-Eastern Union of Scientific Societies,	0 7 6	
Press Cutting Agency, ...	1 1 0	
Commons & Footpaths Preservation Society,	0 10 0	
		3 16 0
Sectional Expenses—Ramblers, 1929, ...	£1 5 11	
Ramblers, 1930	1 17 6	
Entomology, ...	2 7 6	
Plant Galls, ...	1 0 0	
Ornithology, ...	5 0 0	
Botany, ...	2 10 0	
Archaeology, ...	2 5 0	
		16 5 11
Transfer to London Naturalist Account, ...		11 17 5
Transfer to Reserve Account, ...		15 0 0
		£124 16 9
Balance at Bank, 31st October 1930, ...		40 12 3
		£165 9 0

LONDON NATURALIST ACCOUNT.

Balance, 11th November 1929, ...	£3 0 5	Printing London Naturalist, ...	£66 4 8
Donations.	46 6 0		
Advertisement, ...	1 0 0		
Sales of London Naturalist, ...	2 11 0		
Reprints and Maps, ...	1 9 10		
Transfer from General Account, ...	11 17 5		
	£66 4 8		£66 4 8

LIFE COMPOSITION ACCOUNT.

Balance, 11th November 1929, ...	£70 0 0	Balance, 5 per cent. 1929-47 War Stock, 31st October 1930,	£75 0 0
Life Membership Composition, ...	5 0 0		
	£75 0 0		£75 0 0

RESERVE ACCOUNT.

Balance, 11th November 1929, ...	£35 0 0	Balance at Bank, 31st October 1930, ...	£50 0 0
Transfer from General Account, ...	15 0 0		
	£50 0 0		£50 0 0

Audited and found correct, 27th November 1930.

LEWIS EYNON,
C. L. COLLENETTE, *Auditors.*

F. G. DELL,
Treasurer.

Librarians' Report, 1930.

IN spite of the disorganisation caused by the change of Headquarters, there has been an increase in the number of books, manuscripts, etc., borrowed during the year.

In 1929 the total number of books, etc., issued was 184. Since the last Report the Librarians have issued 211 books, etc., classified as follows:—Archaeology, 8; Biography, 1; Biology, 3; Botany, 11; Entomology, 48; General, 38; Geology, 1; Ornithology, 80; Ramblers, 2; Proceedings and Reports, 16; and Science, 3.

Many valuable donations to the Library have been made during the year, including the following:—

Nineteen books and 12 pamphlets, principally on Ornithology, bequeathed by the late Edward Bidwell.

"Birds and Green Places," by A. H. Chisholm, presented by Mr H. Wolstenholme; also "Ootheca Wolleyana," complete in 4 Parts; and 21 Parts of "The Ibis" and Index, presented by Mr Robt. Patterson.

The total additions to the Library since the last Report amount to about 140 books, manuscripts, and other publications. Further particulars of these can be obtained from the Librarians, who wish to take this opportutity of reminding members that in our new Headquarters there are no lighting restrictions, and therefore more time is available for the issuing of books to members after the Meetings.

Robt. W. Pethen,
Edward Mann, *Librarians.*

ERRATA.

London Naturalist for 1929.

p. 78. The Bacot Memorial Lecture on April 23 was by R. S. Bagnall. We offer our sincere apologies to Dr Bagnall for the misprint that rendered his name unrecognisable.
p. 85, line 14 from bottom. For *unicatus* read *tunicatus.*
p. 108, line 10 from bottom. Read orange-yellow larvae.
line 9 from bottom. For *Flaxinus* read *Fraxinus.*
p. 110, line 14. For *Thips* read *Thrips.*
line 2 from bottom. For *Fraxinus vulgaris* Linn. read *Fraxinus excelsior* Linn.

London Naturalist for 1928.

p. 17, line 19. For Rondassi read Rondani.
p. 20, line 12. For 1918 read 1910.
p. 73, line 24. For *septrionalis* read *septentrionalis.*

Officers of Sectional and Branch Committees for 1931.

Archaeology.—Chairman, W. C. Cocksedge. Secretary, W. C. Forster. Recorder, G. J. B. Fox.

Botany.—Chairman, H. Spooner. Secretary, B. T. Ward. Recorder, R. W. Robbins.

Entomology.—Chairman, R. W. Robbins. Secretary, H. J. Burkill.

Ornithology.—Chairman, S. Austin. General Secretary, D. H. Clanchy. Field Meeting Secretary, C. Weeks. Reading Circles Secretary, R. W. Pethen. Bird "Ringing" Secretary, R. W. Hale. Recorders, L. Parmenter and H. A. Littlejohn.

Plant Galls.—Chairman, J. Ross. Secretary and Recorder, H. J. Burkill.

Ramblers.—Chairman, A. Capleton. Secretary, E. L. King.

Chingford Branch.—Chairman, Rev. H. J. Gamble. Secretary, J. F. Hayward.

Archaeological Section.

REPORT FOR 1930.

THE number of members has increased; there having been considerably more new members than resignations.

The section has made eleven excursions at which six Mediæval churches were visited, also the Custom House, Eltham Palace, Greenwich Royal Hospital, Westminster School, and the British Museum. Records have been made of Barking Church, Essex, and Stoke D'Abernon Church, Surrey. At Barking, Mr Winmill, the architect of the recent restorations, gave us some very interesting information, and at Stoke D'Abernon, Mr Gawthorp, who recently restored the brass of Sir John D'Abernon, the oldest in England, explained some details about the brass, which, until he had restored it, had not been known, notably about the method of enamelling. At the Custom House, Mr Leftwich, the Librarian there, gave us a most interesting account of the rise of the King's Revenue from early times; at Eltham, a meeting which was also attended by members of the St Paul's Ecclesiological Society, Mr Yates gave a detailed account of the construction of the timber roof of the Great Hall, one of the best in England of the period (Edward IV.) now remaining; at Greenwich, Mr Sharp explained how much of the present buildings Sir Christopher Wren was responsible for, information which Mr Sharp had largely obtained from the contemporary works records of the Hospital; at Westminster, Mr Tanner, of the Muniment Department of the Abbey, described the mediæval buildings of the school and explained that much of the information he had only recently unearthed from the muniments of the Abbey. The attendances at these excursions have considerably increased: at Westminster, 30; Custom House, 27, and Greenwich, 23. The average attendance has been 18.

There have been two sectional meetings, one was a joint meeting with the Ramblers, at which Mr A. J. Mason showed a large number of slides illustrating his paper on "Rambles in Surrey;" and on the 18th November a meeting was held after the Annual General Meeting, at which the Records of Barking and Stoke D'Abernon were discussed.

There has been no change in the officers of the section, and we still have the advantage of the assistance of Miss Veitch, who kindly duplicates the notices.

W. C. Forster, *Honorary Secretary.*

Botanical Section.

REPORT FOR 1930.

TWO ordinary meetings of the Section have been held during the year, one at Winchester House, when Mr L. G. Payne read a very helpful paper on the Umbelliferae, which was followed by a good discussion; and an informal meeting at our new headquarters, when a number of members contributed particulars of their botanical finds during the summer holidays. On the latter occasion the epidiascope was found to be invaluable for the projection of members' herbarium specimens and the Section's collection of plant photographs. Eleven outdoor excursions were arranged; unfortunately, two had to be abandoned owing to the inability of the leaders to attend. Kew Gardens and the Imperial Institute have been visited, and four specialised excursions have been organised, one for the study of Mosses and Liverworts, one for Brambles, one for Ferns, and a Fungus Foray.

The Section now numbers 87 members, 12 of whom have joined this year.

The herbarium specimens in the Society's collections still require overhauling, and it is hoped that we shall now find an opportunity of undertaking this work in our new premises.

The Section has now joined the Botanical Exchange Club, and the 1929 Report is circulating to a number of members who have subscribed to the special fund. The bound copies of the 1927 and 1928 Reports have been presented to the Library.

Considerable additions have been made to the divisional records this year, and in certain parts of the southern area, for instance, divisions 14, 22 and 24, obvious gaps in our lists have been filled. Probably our records are now approaching a fair presentation of the flora of the area we set out to study, with this reservation, viz., that the difficult genera which are now shown to contain numerous micro-species and forms have so far received but little attention. There is abundant work here for keen systematists. At the same time general lists, particularly of out-of-the-way parts of the district, will be welcomed by the Recorder.

The only species new to the whole area recorded this year are:—

Oenanthe Lachenalii Gmel. Div. 21 (Thames Marshes);
Salvia pratensis Linn. Div. 19 (Holmesdale);
and certain species of *Rubus*, not yet all confirmed.

The *Oenanthe* was found on a Sectional excursion to the Thames Marshes below Dartford on July 12th, when a number of plants of limited occurrence in our area were observed, including *Carum segetum*, *Carduus pycnocephalus*, var. *tenuiflorus*, *Lactuca Serriola* and *L. saligna*, *Rumex pulcher*, *Carex divisa*. A small colony of the handsome Meadow Sage, *Salvia pratensis*, was discovered in East Surrey. This plant was also seen some time ago in the Cobham district, Kent, but apparently escaped the official record at that time. *Teucrium Botrys* and *Thesium humifusum* are two other rare species that were observed this year on one of the Section's outings in the Banstead division.

G. R. A. Short, *Honorary Secretary.*

Entomological Section.

REPORT FOR 1930.

TWO sectional meetings have been held. On 7th January Mr R. W. Robbins read a paper on " Recollections of Lyndhurst Thirty Years Ago," and on 16th December Mr Niblett discussed " Insect Eggs."

Four outings have been carried through, Burnham Beeches being visited on 17th May, Lessness Abbey Wood on 21st June, Eynsford on 12th July, and Epping Forest (for a Larva hunt) on 27th September. The weather was not really favourable on any one of the days, being sunless and cool. On 21st June *Abraxas sylvata* Scop. (*ulmata* F.) was seen in considerable numbers, as also was *Chloroclystis* (*Eupithecia*) *coronata* Hb., whilst among other species observed was *Semiothisa* (*Macraria*) *notata* L. A larva of *Taeniocampa populeti* Tr. was also taken.

At Eynsford a strong cold wind was blowing, but ten species of Butterflies and twelve of Moths were noted, the more interesting being perhaps *Argynnis aglaia* F. and *Lycaena aegon* Schiff., while a number of young larvae of *Sphinx ligustri* L. were beaten from *Viburnum Lantana*.

The date selected for the larva hunt proved to be about two weeks too late and very few specimens were found.

A number of members have again communicated the results of their individual experiences in Lepidoptera during the year, and a summary of these will be found in the form of special notes elsewhere in this volume.

Queen Wasps were seen frequently in the early summer, but apparently did not raise many broods in most districts. Miss Miller mentions " the extraordinary fondness which the Hive Bee has shown this autumn for decaying fruit which had fallen to the ground. As many as five bees were seen feeding upon a single plum. They far outnumbered the wasps which were also very plentiful. The bees seemed exceedingly fond of decaying pears and plums. I also saw many feeding upon fallen sweet apples, such as Blenheim Orange, but not in such quantities as those after the former fruit."

Many of the larger species of Ichneumon flies were noted in May and June, but on the whole parasites do not seem to have been much in evidence.

Mr R. B. Benson has paid attention to the Sawflies but has not yet been able to work through all his captures. Among them were *Dolerus anticus* Kl. and *Janus femoratus* Curtis, both found in Epping Forest. The former species seems hitherto to have been only recorded for Britain from the London District (Stephens, one female), Gloucestershire (V. R. Perkins, 1876, one specimen), Norfolk (sent to Morice by Atmore), and Richmond Park (Dr J. Waterston, 1926), so that Epping Forest is an addition to the list of localities for this very local species.

Tipulids were locally plentiful, but have not been reported in anything like the swarms of the previous year.

Some of the commoner species of Aphides were very noticeable in the spring, but the unseasonable weather probably took toll of them later on, as there were not many in evidence in the summer.

Little work has been done with Coleoptera, but Mr C. Nicholson reports the capture in his garden at Tresillian, near Truro, of two specimens, *Strangalia aurulenta* Fabr., a somewhat local species.

In the Leatherhead district and elsewhere there was a plague of Earwigs, the common species (*Forficula auricularia* L.) swarming into houses in the late summer and autumn. With them came numbers of Woodlice of three or four species.

There seemed to be an almost complete absence of Spiders' webs across the footpaths or on the bushes in the autumn, and no Gossamer threads were noticed in various walks over the North Downs, and only one skein was seen floating in the air at Fetcham, the date being 8th November, but on the other hand there were more spiders than usual coming into the houses and outbuildings.

H. J. Burkill, *Honorary Secretary.*

Ornithological Section.

REPORT FOR 1930.

SECTIONAL Meetings were held at which papers were read as follows:—7th January, "Birds of the Harrow District," by Mr T. H. Harrisson, M.B.O.U.; 21st October, "Birds of the Pembrokeshire Coast," by Mr J. G. Marshall.

On 15th March a visit was paid to the Whitechapel Museum and Mr P. W. Horn kindly conducted the party round the bird collection.

The Field Meetings continue to increase in popularity, as is shown by the average attendance of 14.2 at the 28 meetings held during the year; 70 members and 24 visitors attended one or more. One hundred and twenty-two different species were identified (average 42), including Cirl Bunting, Harrier (? species), Brent Goose, Garganey, Red-breasted Merganser, Golden Plover, Grey Plover, Turnstone, and Sandwich Tern (a party of about 200).

Twelve sub-districts of the Society's area were visited in the course of the following field meetings:—Tring (two visits), Kent Marshes (two visits), Virginia Water, Highams Park, Maldon (Essex), Walthamstow Reservoirs, Harefield, St Albans, Epping Forest (three visits), The Chilterns, Wanstead Park, Hackhurst Downs (all night), Effingham Common, Bookham Common, Richmond Park (two visits), East Horndon, Horsley, Godstone, Essex Marshes, Hackhurst Downs, Fulmer, Weybridge, Broxbourne.

RINGING.

The Society's returns under the *British Birds* marking scheme for the year total 601 birds of 49 species. Although this compares unfavourably with 1327 birds of 45 species for 1929, the decrease is adequately accounted for by the fact that Mr P. A. D. Hollom, who continues to be our most successful ringer, no longer has the opportunities for ringing which he enjoyed last year. This year's results should therefore be considered normal and in the circumstances gratifying. Eleven ringers again took part in the work, and we are indebted to our correspondents, Miss F. Collins and Mr D. A. Hawgood, for their help.

The following eight birds have been reported as recovered:—

(1) A Magpie ringed as a nestling at Cloyne (Co. Cork) by Miss C. E. Longfield on 15th May 1928, and recovered where ringed on 20th February 1930 by "Daily Express."

(2) A Starling ringed at Woodford Green (Essex) by Mr C. L. Collenette as an adult on 27th February 1929, and recovered where ringed on 14th July 1929 by the ringer.

(3) An adult Starling ringed as above by Mr C. L. Collenette on 30th December 1928, and recovered near Woodford by P. Thompson on 28th January 1930.

(4) An adult Starling ringed by Mr P. A. D. Hollom at Bruton (Somerset) on 28th February 1929, and recovered at Sherborne (Dorset) by P. W. Stone on 31st July 1929.

(5) An adult Starling ringed at Beckenham (Kent) by Mr G. Waller on 17th February 1929, and recovered at Trzebiechowo, Poland, about October 1929 by the Postmaster.

(6) A Song Thrush ringed as a young bird by Mr Hollom at Bruton on 13th May 1929, and recovered at Genêts (Manche), France, on 21st December 1929 by M. Godier.

(7) An adult Redbreast ringed by Mr Hollom at Addlestone (Surrey) on 20th January 1928, and recovered where ringed on the 16th August 1928 and 23rd January 1930 by the ringer.

(8) An adult Puffin ringed by Mr H. N. Southern on Skomer Island (Pembs.) on 2nd July 1928, and recovered at Arcachon (Gironde), France, at the end of December 1929 by Syndicat d'Initiative.

READING CIRCLES.

Since the last report a further circle has been instituted and now seven copies of *British Birds* are circulating among 52 members of the section. In addition, through the continued generosity of Miss M. G. L. Best and Mr J. P. Hardiman, the *Scottish Naturalist* is also circulated among 21 members, and a circle of twelve members shares the French journal, *Revue française d'Ornithologie*. The Secretary of the Reading Circle will be pleased to hear from any member who would care to join the Circle for any one or all three of the above journals.

COLLECTIONS.

Fifteen photographs have been added to the collection this year, making the total 196 sheets.

The bird-skin collection has received five additions.

Twenty-one new members have joined the section during the year and, deducting resignations, there is a total membership of 169 as at 31st December 1930.

We have pleasure in announcing that our member, Mr C. S. Bayne, has been appointed the Official Recorder to the Bird Sanctuary Committee of H.M. Office of Works for St James and the Green Parks, and in this connection it will be remembered that Mr Patterson acts in a similar capacity for Bushey Park, and Miss Barclay-Smith for Greenwich Park, both of whom are also members of our section.

The thanks of the section are due to those members and correspondents who have kindly made donations to the collections and furnished records and notes during the year.

D. H. CLANCHY, *Honorary Secretary.*

Plant Galls Section.

REPORT FOR 1930.

TWO sectional meetings have been held at which papers have been read. On 6th May Aphid Galls were discussed, and on 21st October Dipterous Galls.

Five outings have been carried through, the places visited being:— Epping, 14th June; Lessness Abbey Wood, 21st June; Park Downs, Banstead, 5th July; Epsom Common, 30th August; and Box Hill and Ranmore, 6th September. The fixture for Wentworth Woods, 10th May, was cancelled as the Oaks were not sufficiently developed to be worth examining.

At these Outings several interesting species were obtained, some of them being apparently additions to the British list, while on other occasions individual members have been similarly successful in finding new or rare specimens. The following list is compiled from the records sent in.

COLEOPTERA.

Gentiana Amarella L. was again found on the North Downs, galled at the base of the stem, but in each case the Weevil had disappeared.

CYNIPIDAE.

Rosa canina L., *R. rubiginosa* L., and *R. micrantha* Sm. were found in West Kent, galled by *Rhodites mayri* Schl. The last-named is apparently a new host plant for the gall.

Centaurea Scabiosa L., galled by *Aulax Rogenhoferi* Waehtl, was found in some numbers near Banstead (M. Niblett) and also near Bookham, and by Dr R. S. Bagnall in Staffordshire. Galled by *A. scabiosae* Giraud, near Bookham, and at Fetcham.

Hieracium vulgare (Tausch), galled by *Aulacidea pilosellae* Kieff., near Headley, Surrey (R. S. B.), and by an unknown Cynipid in some numbers on the root, Staffs. (R. S. B.).

Hypochaeris radicata L., galled by *Aulax hypochaeridis* Kieff., in fair numbers at two stations near Croydon (M. N.).

Tragopogon pratense L. was found by Dr Bagnall in Surrey, Sussex, Staffordshire, and Durham, galled by *Aulacidea pigeoti* Kieff., and by *A. tragopogonis* Thoms. in Durham and Suffolk.

Oak galls were to most observers very disappointing, as the spring species were scarce owing to the late flowering of the trees. In the autumn there seemed to be a corresponding scarcity, and the only species that was in any quantity was *Andricus globuli* Hartig, on *Quercus sessiliflora* Salisb., near Friday Street. *Dryophanta divisa* Hartig was observed in fair numbers in Shropshire in August, but no specimens of *Andricus solitarius* Fonsc. were to be found where they had been so plentiful the previous year. Some fleshy bud galls, as yet unidentified, were found on 1st June, on *Quercus Robur* L., from which Cynipid flies emerged. These are being submitted to South Kensington for determination. Mr Ross has been able to continue his observations on *Andricus seminationis* Adler, and the results of these appear elsewhere in this volume; Mr Niblett's notes on Oak galls are also printed separately.

Quercus Cerris L. was observed, galled by *Callirhytis glandium* Giraud, in Epping Forest and also on Bookham Common, while galls resembling those of *Andricus circulans* Mayr, but with only one cell instead of a cluster, were found in Shropshire.

CECIDOMYIDAE.

Clematis Vitalba L. Swollen buds of unopened flowers recorded last year were found again this autumn containing white larvae. Several on Ranmore Common.

Silene Cucubalus Wibel. Buds low down on the ground shoots, swollen, the leaves fleshy and incurved to form spherical galls which contain white Cecidomyid larvae. (Apparently Houard 2267.) Near Fetcham, three plants attacked.

Lychnis dioica Mill. Flower buds swollen and unopened: *Contarinia steini* Karsch, Shropshire.

Stellaria graminea L. (1) Top leaves podded, containing white larvae: *Perrisia silvicola* Kieff., Shropshire. (2) Leaves inrolled, with margins folded together. Yellow larvae: ? *Macrolabis stellariae* Liebel.

Ulex minor Roth var. *longispinosus* Rouy & Foue. Flower buds attacked by *Asphondylia ulicis* Verrall, Somerset (J. Ross).

Medicago lupulina L. Leaves fleshy, folded upwards to form a stunted tip to the shoot. Each leaf contained an orange yellow Cecidomyid larva. Surrey.

Lotus corniculatus L. Terminal fleshy galls, green and red, 4×5×4 mm. diameter, open to the exterior by irregular openings on the side of the gall. White Cecidomyid larvae. Surrey.

Rosa Grovesii Baker. *Perrisia rosarum* Hardy, Surrey.

Pimpinella Saxifraga L. (1) *Contarinia pimpinellae* Tavares (R. S. B.); (2) *Lasioptera carophila* F. Loew, Pickett's Hole, Westcott, Surrey.

Peucedanum sativum Benth. & Hook. Leaves attacked by *Macrolabis corrugans* F. Loew, Box Hill.

Cornus sanguinea L. Galls of *Oligotrophus corni* Giraud, were much more abundant than they have been for several years.

Sambucus nigra L. Flower buds remaining closed. *Schizomyia nigripes* F. Loew, Lessness Abbey, Kent.

Viburnum Lantana L. Flower buds swollen and remaining closed. *Contarinia lonicerearum* F. Loew, Denbies, Surrey.

Lonicera Periclymenum L. Terminal leaves adpressed with margins rolled upwards. These leaves turn black after the larva has emerged. One white Cecidomyid larva which retains its colour throughout. The galls resemble those of *Perrisia periclymeni* Rübs., but in the latter the larvae are gregarious, and turn colour from white to red. Shropshire and Essex.

Achillea Ptarmica L. Flower heads aborted and undeveloped. The appearance suggested the presence of mites—*Eriophyes*, but none was found on microscopical examination. Instead, a large number of minute larvae of a midge were disclosed in the heads tested. Epsom Common. A few were found in other heads from Epping Forest.

Senecio aquaticus Hill. Flower heads swollen: *Stictodiplosis jacobaeae* H. Loew, Shropshire.

Hieracium umbellatum L. Head swollen, containing a number of white Cecidomyid larvae. Shropshire.

Hypochaeris radicata L. Growth of flower heads arrested by salmon pink larvae of a midge. Bostall Heath, Kent (J. Ross).

Gentiana Amarella L. Stem swollen, with a fleshy gall near the base. The cavity contained a white cocoon of a midge from which the insect had emerged. Fetcham.

Veronica Chamaedrys L. Terminal leaves adpressed, containing a white midge larva. Several of these galls found at Westcott, Surrey.

Nepeta hederacea Trev. Terminal leaves from ground runners forming spherical galls, each containing a white larva: ? *Perrisia glechomae* Kieff. Bent petioles and concavities in the upper surface of older leaves seem to be attributable to the same insect. Box Hill and Pickett's Hole, Surrey.

Ulmus montana Stokes. *Oligotrophus ulmi* Kieff. Shropshire and Surrey.

Betula alba L. (1) Brown area, roughly circular, with a slight concavity in the under surface of the lamina of the leaf, containing a white Cecidomyid larva. Bagdon Hill and Ranmore Common. (2) Petioles swollen, each containing a white or yellow larva lying under the bark. Epping Forest

Carpinus Betulus L. *Perrisia carpini* F. Loew: noted in Epping Forest, but the gall is not much in evidence considering the amount of Hornbeam there. It was also found in Lessness Abbey Wood.

Quercus Robur L. (1) Buds aborted; occupied by pink Cecidomyid larvae. Coldharbour Common, Surrey. (2) Acorns aborted; several white Cecidomyid larvae found at the base inside the cup. Somerset (J. Ross).

Salix Caprea L. *Rhabdophaga pierrei* Kieff., Bookham Common.

S. cinerea L. *Rh. nielseni* Kieff., Bookham Common.

Populus tremula L. *Perrisia populeti* Rübs., Epsom (M. N.).

Brachypodium sylvaticum Roem. & Schult. *Poomyia hellwigi* Rübs., Ranmore (R. S. B.).

MUSCIDAE.

Acer campestre L. Gall roughly rectangular in shape in the lamina of a leaf with a central umbo on a vein which intersects the gall. In this umbo is a small white larva of a Dipteron, not Cecidomyid. Several galls on one tree near Kingswood, Surrey.

Inula squarrosa Bernh. Heads harder than normal and with duplication of bracts outside, green. Larvae found eating the achenes at the base of the florets. Box Hill.

Hieracium vulgare (Tausch). *Tephritis ruralis* H. Loew, Shropshire.

Populus tremula L. The gall attributed in 1926 (*L.N.*, 1926, p. 51) to *Agromyza schineri* Giraud, has now been identified by Dr Bagnall as that of *Melanagromyza simplicoides* Hendel.

PSYLLIDAE.

Urtica dioica L. *Trioza urticae* L. A few galls were noted in the autumn.

APHIDIDAE.

Stellaria uliginosa Murr. *Brachycolus stellariae* Hardy. Near Westcott, Surrey.

Populus nigra L. *Pemphigus populi* Courchet. This species, recorded last year from one tree in Shropshire as an addition to the British list, was again seen on that tree, and also on two other trees a mile away, so it should be well established in that locality. It was associated with *P. spirothecae* Pass., *P. marsupialis* Courchet, and *P. bursarius* L. *P. spirothecae* was also found plentifully in Surrey, at Beddington in August (M. N.), and at Barnes in September.

Ulmus montana Stokes and *U. campestris* L. were both very heavily galled again this year by *Eriosoma ulmosedens* Marchal, in Shropshire. The former was galled by *Tetraneura ulmifoliae* Baker in several localities (M. N.).

ERIOPHYIDAE.

Viola hirta L. *Eriophyes violae* Nal. Plentiful in one area on Box Hill.

V. lutea Huds. *E. violae* was again seen in Shropshire wherever the plant was met with.

Ornithopus perpusillus L. Careful search in July and August on the ground where the *Eriophyes* galls were so plentiful in Shropshire last year failed to disclose any galled plants. Only a few normal plants were to be seen. From this the deduction may be made that the mites had so effectively prevented the plants, which are annuals, from producing seed that they had destroyed their host plants. A similar state of affairs was suggested a few years ago in the case of *Galium Aparine*.

Rubus plicatus Whe. & Nees. *Eriophyes rubicolens* Can. Pett's Wood, Kent (B. T. Ward).

R. mollissimus (Rogers). *E. gibbosus* Nal. Ranmore Common.

Rubus sp. *E. rubicolens* Can. Epping Forest.

Pyrus Malus L. (1) *Eriophyes* sp. Margins of the leaves rolled tightly upwards, sometimes completely round the circumference of the leaf. Three localities in Shropshire. (2) *E. malinus* Nal. Two localities in Shropshire and also in Epping Forest. (3) Patches of whitish hairs on the under surface of the leaf, apparently due to *Phyllocoptes* sp. Epping Forest.

Lonicera Periclymenum L. *E. xylostei* Can. was found in four fresh localities in Shropshire.

Achillea Ptarmica L. (1) Axillary buds not developing: *Eriophyes* sp. Epsom Common. (2) Flower heads aborted and undeveloped, mostly without petals; on examination they were found to be full of *Eriophyes* sp. and their eggs. Epsom Common and Epping Forest.

Senecio Jacobaea L. *E. lioproctus* Nal. Epsom Common.

Picris Hieracioides L. *E. picridis* Can. & Mass. A specimen of this plant from Missenden, Bucks, was shown at a meeting of the Botanical Section on 16th September, and Mr Ross noticed patches of Eriophyid-like hairs on the flower stalks. On examination mites were discovered among them.

Crepis taraxacifolia Thuill. *E. rechingeri* Nal. Several plants heavily attacked near Chalfont (Rev. P. H. Cooke).

Campanula glomerata L. Galls answering the description of those attributed to *E. schmardae* Nal. on *C. medium* L. (Houard, 5485) were found in profusion over a considerable area on one of the slopes of Box Hill. Mites were to be seen in numbers on microscopical examination, and Mr Niblett observed two separate species. ? *E. schmardae* Nal. and *E. campanulae* Lindr.

Fraxinus excelsior L. (1) *E. fraxini* Karp. Very plentiful in Shropshire this year, trees that were only slightly attacked last year being heavily galled in 1930. (2) Leaves with the mid-rib curved upwards into a hump with a corresponding concavity below furnished with white hairs. Apparently Eriophyid, but no mites were discovered on microscopical examination. Fetcham Downs.

Gentiana Amarella L. The galls of *E. kerneri* Nal. were very scarce near Dorking where they have been seen for some years now, sometimes in considerable quantities.

NEMATODA.

Hypochaeris radicata L. *Tylenchus* sp. attacking the leaves. Friday Street, Surrey.

Leontodon autumnale L. *Tylenchus* sp. attacking the flower stalks. Fetcham Downs.

H. J. Burkill, *Honorary Secretary.*

Ramblers' Section.

REPORT FOR 1930.

THE membership of the Section remains about the same as at the end of last year.

Eleven Rambles have been held, two being abandoned owing to the inclement weather. Attendance has varied between 3 and 15, the average being 8.

Many things of interest have been seen on these excursions, which have been greatly enjoyed, and which have taken the members by footpaths and byways through some of the loveliest country round London.

On the 18th May the Section joined the Hertfordshire Branch of the B.E.N.A. in a ramble in the Beane Valley between Stapleford and Watton, Mr Ray Palmer, F.E.S., F.Z.S., being the leader.

The Section continues to be affiliated to the Federation of Rambling Clubs.

A. Capleton, *Honorary Secretary.*

Chingford Branch.

REPORT FOR 1930.

THE Branch membership during 1930 has been fairly well maintained, five new associates just about balancing the resignations. The attendance at indoor meetings, including visitors, averaged 23, and the average attendance at outdoor meetings was 4.

The following lectures were delivered:—" Norman Architecture," Trevor J. S. Blake, B.Sc.(Arch.); "Our District Forty Years Ago," Dr Millais Culpin: " The Goldfish," P. W. Horn; " The Lowliest Forms of Animal Life," J. F. Hayward; " Sponges," Rev. H. J. Gamble, M.A.; " Some Birds of the Sea," P. J. Hanson; " Some Ruins and Races of the Far East," Miss C. E. Longfield, F.R.G.S., F.Z.S., F.E.S.; " Bees and their Life History," L. F. Tucker.

A somewhat new feature in the indoor meetings was an exhibition which dealt specially with pond and microscopic life. This was well supported by members and friends with exhibits and microscopes.

As noted above, the outdoor meetings were very poorly attended although three of these were arranged.

Again we have to thank Mr J. Ross for his valuable help at the lantern.

John F. Hayward, *Local Secretary.*

List of Members.

(Corrected up to 31st March 1931.)

It is particularly requested that Members will inform the Secretary as soon as possible of any change of address.

Honorary President:

THE RIGHT HON. THE VISCOUNT GREY OF FALLODON, K.G., P.C.

Honorary Vice-Presidents:

PROF. M. GREENWOOD, D.Sc., F.R.S., F.R.C.P.
F. J. HANBURY, F.L.S., F.E.S. L. B. PROUT, F.E.S. J. ROSS.

Honorary Members:

1894 Burrows, Rev. C. R. N., F.E.S., The Vicarage, Mucking, Stanford-le-Hope, Essex. (Lep.)
1927 Le Souef, A. S., C.M.Z.S., R.A.O.U., Taronoga Zoological Park Trust, Sydney, Australia.
1899 Massey, Herbert, M.B.O.U., F.E.S., Ivy Lea, Burnage, Didsbury, Manchester. (Lep., Orn., Ool.)
1910 Samuelson, Edward, The Cot, Long Bennington, Newark, Notts. (Mam., Rep.)

Members:

1929 Acland, Miss C. M., M.B.O.U., Walwood, Banstead, Surrey. (Orn.)
1892 Adkin, R., F.E.S., Hodeslea, Meads, Eastbourne. (Lep.)
1929 Aldis, Miss J. B. W., 68 Longton Grove, West Hill, Sydenham, S.E.26. (Orn., R.)
1925 Aldred, Miss B. A., 16 Boscastle Road, Dartmouth Park, Kentish Town, N.W.5.
1927 Aldred, Miss K. V., 5 Ladbroke Court, Ladbroke Gardens, Notting Hill, W.11. (Arch., Orn.)
1922 Aldred, Miss M., Flat 5, 21 Ladbroke Gardens, Notting Hill, W.11. (Orn.)
1928 Alexander, O. A., 23 New Cavendish Street, W.1. (Ent.)
1925 Archbould, R. S., Forest Way, Loughton, Essex. (Orn.)
1924 Aris, A., 44 Oldfield Road, Hampton, Middlesex.
1915 Aris, E. A., F.Z.S., 9 Oak Avenue, Priory Road, Hornsey, N.8. (Lep.)
1892 Austin, S., F.Z.S., 43 Darenth Road, Stamford Hill, N.16. (Orn., Arch., R.)
1929 Baggallay, Miss J., 11 Ridgway Place, Wimbledon, S.W.19. (Orn.)
1929 *Bagnall, R. S., D.Sc., F.R.S.E., F.L.S., Carlton House, Regent Street, S.W.1. (Plant Galls, Ent., Bot.)
1927 Baily, Miss A. R., Cressex Lodge, Binfield, Berks. (Arch., Bot., Orn., Ent., Plant Galls, R.)

1927 Baird, The Hon. J. L., 21 Upper Brook Street, W.1. (Orn.)
1924 *Baker, Edward C. S., J.P., O.B.E., F.Z.S., F.L.S., M.B.O.U., H.F.A.O.U., 6 Harold Road, Upper Norwood, S.E.19. (Orn.)
1927 Barclay-Smith, Miss P., F.Z.S., M.B.O.U., Park Lodge, Hervey Road, Blackheath, S.E.3. (Orn.)
1927 Barr, Mrs Margaret, 50 Penywern Road, Earls Court, S.W.5. (Orn., Bot.)
1930 Barton, Wm. C., 43 Rosary Gardens, S. Kensington, S.W.7. (Bot.)
1903 *Battley, Mrs, 21 Creswick Road, West Acton, W.3.
1915 Bayne, Charles S., 92 Fleet Street, E.C.4. (Orn.)
1930 Beatty, W. G., 7 St Mary Abbots Place, Kensington, W.8. (Orn., Arch.)
1926 Benn, Miss A., 68 South Esk Road, Forest Gate, E.7. (Orn., Ent.)
1929 Benson, R. B., M.A., F.E.S., The British Museum (Natural History), South Kensington, S.W.7. (Hym., *esp.* Sawflies, Plant Galls.)
1927 Best, Miss M. G. L., F.Z.S., M.B.O.U., 28 Paulton's Square, Chelsea, S.W.3. (Orn.)
1920 Biddiscombe, W., 3 Broadway, Woking, Surrey. (Bot.)
1928 Binning, Miss J. S., Eildon, 13 Florence Road, Sanderstead, Surrey. (Orn.)
1896 Bishop, E. B., Lindfield, Marshall Road, Godalming, Surrey. (Bot., Arch., Plant Galls, Orn.)
1926 Blackett, Miss F., 196 Cromwell Road, Earls Court, S.W.5. (Orn.)
1930 Blair, K. G., 120 Sunningfield Road, Hendon, N.W.4. (Ent.)
1926 Blezard, Miss R., F.Z.S., M.B.O.U., 117 Sloane Street, S.W.1. (Orn., Bot.)
1925 Boardman, Stuart, 45 Empress Avenue, Woodford Green, Essex. (Orn.)
1902 Braithwaithe, J. O., 18 Warren Road, Chingford, E.4. (Micr., Bot., Ent.)
1910 Braithwaithe, Miss N. A., 18 Warren Road, Chingford, E.4.
1929 Brants, Mrs J. C., The Sheiling, Jordans, nr. Beaconsfield, Bucks. (Orn.)
1929 Brearley, Miss B., 93 South End Close, Hampstead, N.W.3. (Orn., R., Bot., Arch., Ent.)
1930 Brend, Wm. A., M.A., M.D., B.Sc., 14 Bolingbroke Grove, Battersea, S.W.11. (Arch., Orn., R.)
1916 Brown, A., F.Z.S., 44 Ravensdale Road, Stamford Hill, N.16. (Orn., Arch., Geol., R.)
1926 Browne, Miss Constance H., 219 Harlesden Road, Willesden, N.W.10. (R., Arch., Bot.)
1927 Bullard, G. E. S., 253 West End Lane, West Hampstead, N.W.6. (Bot.)
1930 Burghan, Miss J. E., 74 Old Oak Common Lane, East Acton, W.3. (Orn.)
1915 Burkill, H. J., M.A., F.R.G.S., 3 Newman's Court, Cornhill, E.C.3. (Plant Galls, Lep., Bot., Geol., Orn., R.)

1931 Button, H. S., F.Z.S., The Cedar House, Hillingdon, Middlesex.
1928 *Campbell, J. M. H., M.D., 47 Arkwright Road, Hampstead, N.W.3. (Orn., R.)
1912 Capleton, A., Beaufort House, 37 Lansdowne Road, S. Woodford, E.18. (Mam., Orn., R., Bot.)
1926 Carr, Miss A. N., 7 Cambridge Road, Watford, Herts. (Orn., R.)
1930 Chandler, S. E., D.Sc., F.L.S., 59 Anerley Park, Penge, S.E.20. (Bot.)
1927 Clanchy, Mrs B. L., Russell Mansions, 21 Coram Street, W.C.1. (R., Orn.)
1927 Clanchy, D. H., Russell Mansions, 21 Coram Street, W.C.1. (R., Orn.)
1910 Clarke, J. W., Hazeldene, 21 The Ridgeway, Chingford, E.4. (Bot.)
1928 Clarke, H. T., The Yews, Godmersham, Canterbury, Kent.
1927 Coates, Mrs E. F. M., 5 King's Garth, London Road, Forest Hill, S.E.23. (Orn.)
1927 Coates, J. B., 5 King's Garth, London Road, Forest Hill, S.E.23. (Orn.)
1929 Coates, Miss N. H., Woodhouse, Beaumont Road, Wimbledon Park, S.W.19. (Orn., Bot.)
1904 Cockayne, E. A., M.A., D.M., F.R.C.P., F.E.S., 116 Westbourne Terrace, Paddington, W.2. (Lep., Biol.)
1925 Cocksedge, W. C., 6 Aldersmead Road, Beckenham, Kent. (Orn.. Arch.)
1929 Cocksedge, Mrs, 6 Aldersmead Road, Beckenham, Kent. (Arch., Bot.)
1907 Collenette, C. L., F.R.G.S., F.E.S., Gothic Lodge, Woodford Green, Essex. (Ent., Orn.)
1914 Connoll, Miss E., 98 Connaught Avenue, Chingford, E.4.
1904 Cooke, Rev. P. H., M.A., 19 Hainthorpe Road, West Norwood, S.E.27. (Bot., Arch.)
1925 Corner, Mrs D. H., 69 Finchley Road, St John's Wood, N.W.8. (R.)
1928 Cox, Miss L. E., 72 Corringham Road, Golders Green, N.W.11. (Bot.).
1929 Cranfield, Mrs V., Little Tompsetts, Forest Row, Sussex. (Orn.)
1930 Critchley, Miss R. D., 19 Clephane Road, Essex Road, N.1.
1931 Croal-Thomson, Miss I., 32 Cholmeley Park, Highgate, N.6. (Orn., R.).
1930 Crocker, Miss L. H., 23 Upper Westbourne Terrace, W.2. (Bot.)
1927 Cross-Rose, F., Kenmore, 20 Woolstone Road, Forest Hill, S.E.23. (Orn.)
1928 Cunningham, Miss D. W. M., 50 Ladbroke Grove, Notting Hill, W.11. (Orn., Ent., Plant Galls.)
1930 Cunningham, J., M.B.O.U., Fernhill, Belfast. (Orn.)
1892 Cyriax, R. C., 23 Aberdare Gardens, West Hampstead, N.W.6. (Arch., Aryan question, Indo-European languages.)

1920 Dallas, J. E. S., 83 Belsize Lane, Hampstead, N.W.3. (Orn., Bot., Arch.)

1925 Dallas, Mrs Rosa F., 83 Belsize Lane, Hampstead, N.W.3.

1922 Davis, E. J., M.I.Mech.E., Milestone, Church Hill, Loughton, Essex. (Orn.)

1930 Dayal, Har, M.A., Ph.D., 10 Churchill Road, Edgware, Middlesex. (Bot.)

1926 Deane, Miss M. B. H., The Berries, Gerrards Cross, Bucks. (Orn.)

1910 Dell, F. G., 55 Russell Road, Buckhurst Hill, Essex. (Pond Life, Micr., Orn.)

1927 Dolman, L. H., Trinity School House, Blackheath Hill, S.E.10. (Arch.)

1928 Douglas-Smith, Miss K., 19 Thurlow Road, Hampstead, N.W.3. (Arch., Orn., Bot.)

1927 Druce, F., M.A., F.L.S., 7 Culford Gardens, Chelsea, S.W.3. (Bot.)

1927 Dunkerley, Rev. C. L., Laleham Vicarage, Staines, Middlesex. (Arch., Orn.)

1928 Emberson, L. M., 49 Adela Avenue, West Barnes, New Malden, Surrey. (Orn.)

1927 English, Miss F., 8 Dorville Road, Ravenscourt Park, Hammersmith, W.6. (Orn., Bot., Arch., R.)

1927 Evans, E. B., 86 Emmanuel Road, Balham, S.W.12. (Orn.)

1907 Eynon, Lewis, B.Sc., F.I.C., Fernleigh, Hall Lane, Upminster, Essex. (Chem.)

1925 Farish, Mrs, Corner House, 42 London Lane, Bromley, Kent.

1929 Finch, F. R., 9 Cheyne Row, Chelsea, S.W.3. (Orn.)

1927 Fisher, Mrs G. L., 80 Richmond Avenue, Hillingdon, Middlesex. (Arch.)

1930 Fitch, Miss N., 97 Longton Avenue, Sydenham, S.E.26. (R.)

1927 Ford, H. E., 30 The Common, Upper Clapton, E.5. (Orn.)

1922 Forster, W. C., 40 Nevern Square, Earls Court, S.W.5. (Arch., R.)

1924 Foster, John B., B.A., Aldwick, Holland Road, Sutton, Surrey. (Orn.)

1928 Fox, G. J. B., 45 Stanwick Mansions, West Kensington, W.14. (Arch.)

1931 Frohawk, F. W., M.B.O.U., F.E.S., Essendene, Cavendish Road, Sutton, Surrey. (Orn., Ent.)

1931 Furneaux, Miss S., 15 Christchurch Road, Dartford, Kent. (Orn., Bot.)

1920 Gamble, Rev. H. J., M.A., 14 Frederica Road, Chingford, E.4. (Arch., Conch.)

1927 Gardiner, Miss L., 14a St James Road, Tooting, S.W.17. (Orn., Arch.)

1928 Gauntlett, H. L., F.Z.S., F.E.S., F.R.M.S., F.R.H.S., Howard's Lane, Putney, S.W.15. (Orn., Bot., Ent.)

1910 Gaze, W. E., 10 The Avenue, Highams Park, Chingford, E.4. (Lep., Bot., Chem.)
1909 Gerrard, V., 38 Campden Hill Court, Campden Hill Road, Kensington, W.8. (Lep.)
1910 Glegg, W. E., F.Z.S., M.B.O.U., The House, Albion Brewery, Whitechapel Road, E.1. (Orn.)
1910 Glegg, Mrs, The House, Albion Brewery, Whitechapel Road, E.1. (Orn., Arch.)
1929 Goodfellow, Miss L., Flat 3, 28 John Street, Gray's Inn, W.C.1. (Orn.)
1929 Goodwin, J. L., Grodwell, Monkham's Drive, Woodford Green, Essex. (Ent., Orn.)
1930 Goodwin-Vanner, R. E., F.R.H.S., F.R.C.I., Essex Villa, Guildford, Surrey. (Arch.)
1927 Green, Roland, F.Z.S., Ruskin Studio, 7 New Court, Lincoln's Inn, W.C.2. (Orn.)
1931 Greenwood, F. D., Farm Lodge, Edenbridge, Kent. (Lep.)
1899 *Greenwood, Prof. M., D.Sc., F.R.S., F.R.C.P., Hillcrest, Church Hill, Loughton, Essex. (Arch., Biol.)
1928 Griffin, Miss M., 22 Addison Way, Golders Green, N.W.11. (Orn.)
1920 Grinling, C. H., B.A., 71 Rectory Place, Woolwich, S.E.18. (Bot.)
1929 Gulliver, Miss M. D., 84 Endsleigh Gardens, Ilford, Essex. (Orn.)
1927 Hale, R. W., 35 Christchurch Avenue, Kilburn, N.W.6. (Orn.)
1903 Hanbury, F. Capel, Westfield, Hoddesdon, Herts. (Lep.)
1906 Hanbury, Frederick J., F.L.S., F.E.S., Brockhurst, East Grinstead, Sussex. (Bot., Lep.)
1897 *Hanson, P. J., Burcroft, Village Road, Bush Hill Park, Enfield, Middlesex. (Orn., Arch.)
1927 Hardiman, Miss A., 1 Avenue Mansions, Park Avenue, Willesden Green, N.W.2. (R.)
1921 Hardiman, J. P., C.B.E., B.A., 1 Avenue Mansions, Park Avenue, Willesden Green, N.W.2. (Orn., R.)
1925 Hart, C., Chelston, Hillside Road, Pinner Hill, Middlesex. (Orn., Bot.)
1927 Harvey, J. H., Dallinga, Lower Road, Great Bookham, Surrey. (Bot.)
1930 Haworth, Miss F. M., B.Sc., F.Z.S., 13 Theobalds Road, W.C.1. (Zoo., Bot.)
1927 Hayward, Jno. F., 17 Heathcote Grove, Chingford, E.4. (Geol., Zoo.)
1929 Hazlewood, A., 5 Marksbury Avenue, Richmond, Surrey. (Orn.)
1902 Heath, G. H., M.A., 7 St Phillip's Road, Surbiton, Surrey. (Lep.)
1926 Hibbert-Ware, Miss A., F.L.S., M.B.O.U., Hilary, Girton, Cambridge. (Orn.)
1930 Hick, A. E., 68 Brockswood Lane, Welwyn Garden City, Herts.
1929 Hicks, John B., F.E.S., 30 Stanhope Gardens, South Kensington, S.W.7. (Ent.)
1929 Hollom, P. A. D., Birchfield, Addlestone, Surrey. (Orn.)
1930 Hopkins, Graham, 5 Purley Bury Avenue, Purley, Surrey. (Orn.)

1919 Horn, P. W., Stepney Borough Museum, 77 Whitechapel High Street, E.1. (Orn., Aquaria)

1905 Hornblower, A. B., 91 Queen's Road, Buckhurst Hill, Essex. (Api., Arch., Orn., R.)

1910 Howard, D. Lloyd, J.P., F.I.C., F.C.S., Pettits Hall, Chigwell, Essex. (Chem.)

1927 Hussey, H. J., 416 High Road, Leyton, E.10. (Arch., Orn., R.)

1930 Hutton, Miss R. E., 13 Theobalds Road, W.C.1. (Bot., Zoo.)

1927 Impey, Mrs L. A., Great Rolbright Manor, Chipping Norton, Oxon. (Orn.)

1927 Jago, R. P., F.Z.S., Rookwood, Bridle Road, Eastcote, Middlesex. (Orn.)

1927 Jeffery, H. J., A.R.C.Sc., F.L.S., 14 Coppetts Road, Muswell Hill, N.10. (Bot.)

1926 Jehan, Kenneth C., 82 West Hill, Sydenham, S.E.26. (Bot., Arch.)

1929 Johns, Miss F. E., 40 The Ridgeway, Kenton, Harrow, Middlesex. (Orn., R., Bot.)

1928 Joicey, J. J., F.L.S., F.Z.S., F.R.G.S., F.E.S., The Hill, Wormley, Surrey. (Lep.)

1925 Jones, Jock Ll., 69 Finchley Road, St John's Wood, N.W.8. (R., Bot.)

1899 *Kaye, W. J., F.E.S., Caracas, Ditton Hill, Surbiton, Surrey. (Lep.)

1931 Kent, Mrs J. Barton, 2a Grove End House, St John's Wood Road, N.W.8. (Arch.)

1930 King, Miss C. A., 152 Harley Street, W.1. (Orn., Arch.)

1929 King, E. L., 34 Walloston Gardens, East Sheen, S.W.14. (Orn., Bot. R.)

1928 Kingsbury, A. W. G., 24 Bina Gardens, Earls Court, S.W.5. (Orn., Ent.)

1929 Kitto, Mrs N. C., Rothesay, Temsford Road, St Albans, Herts. (Orn.)

1928 Lack, H. L., M.D., F.R.C.S., 31 Marlborough Place, St John's Wood, N.W.8. (Orn.)

1928 Lack, D. L., M.B.O.U., 31 Marlborough Place, St John's Wood, N.W.8. (Orn.)

1929 Lamb, Mrs K. E., Mildura Cottage, Lymington, Hants. (Orn.)

1927 Lane, J. H., 571/3 Commercial Road, E.1. (Chem.)

1930 Ledlie, R. C. B., M.B., B.Sc., F.R.C.S., 23 Beaumont Street, W.1. (Bot.)

1928 Lee, Miss M., 22 Addison Way, Golder's Green, N.W.11. (Orn.)

1928 Leech, T., 33 First Avenue, Bush Hill Park, Enfield, Middlesex. (Bot., Orn.)

1929 Leigh, Kenneth, 24 Queen's Road, Beckenham, Kent. (Orn.)

1922 Lemon, F. E., M.A., LL.B. (Cantab), J.P., C.A., Hillcrest, Redhill, Surrey. (Orn.)

1922 Lemon, Mrs M. L., M.B.E., J.P., M.B.O.U., F.Z.S., Hillcrest, Redhill, Surrey. (Orn.)

1919 Leyton Public Libraries, per the Librarian (E. Sydney, F.L.A.), Central Library, Leyton, E.10.

1927 Lister, Miss G., 871 High Road, Leytonstone, E.11. (Orn.)

1926 *Littlejohn, H. A., 93 Carlyle Road, Manor Park, E.12. (Orn., Bot.)

1926 Longfield, Miss C. E., F.R.G.S., F.E.S., F.Z.S., 20 Pont Street, S.W.1. (Orn., Ent.)

1930 *Low, G. C., M.A., M.D., F.R.C.P., F.Z.S., M.B.O.U., 86 Brook Street, Grosvenor Square, W.1. (Orn., Zoo.)

1919 Lowne, B. T., Ravenscroft, 129 Bromley Road, Catford, S.E.6. (Bot.)

1928 MacAlister, Mrs E., 10 St Albans Road, Kensington, W.8. (Orn., Bot.)

1911 MacIntosh, Miss I. S., 69 Windmill Hill, Enfield, Middlesex. (Bot.)

1911 MacIntosh, Miss J. D., 69 Windmill Hill, Enfield, Middlesex.

1929 Mackay, Helen M. M., M.D., 28 John Street, Bedford Row, W.C.1. (Orn.)

1923 *Macpherson, A. Holte, F.Z.S., 21 Campden Hill Square, W.8. (Orn.)

1929 Maltby, Miss J., Duncliffe, 157 Copers Cope Road, Beckenham, Kent. (Orn., Bot., Pond Life.)

1923 Mann, Edward, 10 Frankland Road, S. Chingford, E.4. (Pond Life, Orn.)

1929 Marshall, John G., Rye House, Green Lane, New Eltham, S.E.9. (Orn.)

1929 Martin-Hurst, Miss B., The End House, Roehampton, S.W.15. (Orn.)

1928 Mason, A. J., F.R.S.A., 112 Drakefield Road, Tooting, S.W.17. (Arch., Bot., Ent., R.)

1927 Mellows, C., M.A., F.E.S., School House, Bishops Stortford College, Herts. (Bot., Ent.)

1929 Middleton, A. D., University Museum, Oxford. (Zoo.)

1931 Millburn, Miss F. C., 62 Herne Hill, S.E.24. (Orn.)

1929 Millin, S. S., Dartry, Wood End Road, Harpenden, Herts. (Orn., Bot., Arch.)

1926 Mitchell, Miss E., 29 Aberdeen Road, Wealdstone, Middlesex. (Bot.)

1928 Murphy, Miss H., 43 Stafford Row, Bow, E.3. (Bot., Orn., Ent., Arch.)

1926 Niblett, Montague, 10 Greenway, Wallington, Surrey. (Ent., Plant Galls.)

1893 *Nicholson, Miss B., Rotherwood, 49 Danecourt Road, Parkstone, Dorset. (Bot.)

1928 Noel, Miss E. F., 37 Burnham Court, W.2. (Bot., Orn., R.)

1925 Norman, Cecil, F.L.S., 55 Eccleston Square, S.W.1. (Bot., Orn.)

1926 *Oldham, Charles, F.L.S., F.Z.S., M.B.O.U., The Bollin, Shrublands Road, Berkhamsted, Herts. (Bot., Orn., Conch.)

1931 Overton, Mrs W., 44 Warren Road, Chingford, E.4. (Orn., Bot.)

1929 Page, Miss M. M., 19 Hainthorpe Road, West Norwood, S.E.27. (Orn.)

1929 Palmer, E. W., A.I.A.A., 56 Fore Street, Upper Edmonton, N.18. (Arch.)

1924 Palmer, Miss Fanny, 8 Ulundi Road, Blackheath, S.E.3. (Arch.)

1928 Palmer, R., F.E.S., F.Z.S., Standeford, Baldock Road, Letchworth, Herts. (Ent., Orn., Plant Galls, Pond Life, R.)

1925 *Parmenter, L., 94 Fairlands Avenue, Thornton Heath, Surrey. (Orn.)

1921 Parsons, S. T. T., 33 Trebovir Road, Earls Court, S.W.5. (Orn.)

1922 Patterson, R., F.L.S., M.R.I.A., 7 The Crest, Berrylands, Surbiton, Surrey. (Orn., R.)

1922 Payne, C. H., 13 Kidderpore Gardens, Hampstead, N.W.3. (Orn., Arch.)

1930 Payne, E. D. B., 9 Oaktree Avenue, Palmer's Green, N.13. (Orn.)

1923 Payne, E. M., Tilgate, Long Lane, Hillingdon, Middlesex. (Bot., Orn.)

1927 Payne, Mrs E. M., Tilgate, Long Lane, Hillingdon, Middlesex. (Bot.)

1923 Payne, L. G., 22 Marksbury Avenue, Richmond, Surrey. (Bot.)

1922 Pethen, R. W., 108 Northwold Road, Upper Clapton, E.5. (Orn., Ent.)

1929 Phelan, T. C. E., 38 Richmond Road, Bayswater, W.2. (Orn., Bot.)

1927 Piper, Miss G. E. M., 12 Elms Road, Clapham, S.W.4. (Orn.)

1925 Poock, Sydney G., 17 Green Moor Link, Winchmore Hill, N.21. (Orn.)

1928 Poole, A. C., 42 The Mall, Ealing, W.5. (Orn., Bot.)

1910 Pratt, W. B., 10 Lion Gate Gardens, Richmond, Surrey. (Lep.)

1892 Prout, L. B., F.E.S., 84 Albert Road, Dalston, E.8. (Lep., Biol.)

1929 Pugh, Miss E. C., The Hill Farm, Stockbury, Kent. (Orn.)

1929 Purey-Cust, Miss Peggy, 49 West Hill, Highgate, N.6.

1927 Raikes, Miss D., 9 Launceston Place, Kensington, W.8. (Arch., Bot., Orn.)

1926 Rankin, The Hon. Lady, Kensington Palace Mansions, De Vere Gardens, Kensington, W.8. (Orn.)

1929 Reed, Miss J. B., 29 Thornton Hill, Wimbledon, S.W.19. (Orn.)

1930 Reeve, Miss E. A., The Penn Club, 9 Tavistock Square, W.C.1. (Bot., Orn., Ent., R.)

1929 Rew, E., 23 Chester Terrace, Regents Park, N.W.1. (Orn.)

1929 Rew, Miss M., 23 Chester Terrace, Regents Park, N.W. 1. (Orn.)

1925 Richardson, Arthur, Barrowell Green, Winchmore Hill, N.21. (Orn.)

1928 Richardson, G., 74 Tulse Hill, Brixton, S.W.2. (Bot.)

1922 Robbins, J. C., F.E.S., Farnham House Laboratory, Farnham Royal, Bucks. (Bot., Arch., Ent., Plant Galls.)

1892 Robbins, R. W., The Rosery, Limpsfield, Surrey. (Bot., Lep., Orn., Arch., Plant Galls.)

1893 Robbins, Mrs R. W., The Rosery, Limpsfield, Surrey. (Bot., Arch., Orn.)

1910 *Ross, J., 18 Queen's Grove Road, Chingford, E.4. (Bot., Plant Galls, Orn.)

1890 Routledge, G. B., F.E.S., Tarn Lodge, Heads Nook, Carlisle, Cumberland. (Lep., Col., Hem.)

1931 Rowberry, E. C., 7 Burlington Road, Osterley, Middlesex. (Orn.)

1930 Rushen, W. N., 55 Kendall Road, Beckenham, Kent. (Orn., Arch.)

1929 Sampson, E. S., Thursley, Court Road, Banstead, Surrey. (Orn.)

1930 Scudamore, Miss M., 31 Ashchurch Park Villas, Ravenscourt Park, W.12.

1895 Shaw, V. Eric, Betula, Park View Road, New Eltham, S.E.9. (Hym., Lep., Micr., Api.)

1929 Short, G. R. A., 201 Bedford Hill, Balham, S.W.12. (Bot., Micr., Pharmacognosy.)

1929 Shorter, Miss E. M. L., 75 Onslow Gardens, Muswell Hill, N.10. (R.)

1892 Simes, J. A., O.B.E., F.E.S., Kingsley Cottage, Queen's Road, Loughton, Essex. (Ent.)

1911 Simpson, W., M.B., B.S., D.P.H., The Ivies, 3 Adelaide Road, Andover, Hants. (Arch., Bot., Lep., Plant Galls, R.)

1892 Smith, A. C., 18 Mornington Road, Woodford Green, Essex. (Ent.)

1892 Smith, C. B., F.E.S., 61 Onslow Gardens, Muswell Hill, N.10. (Lep.)

1929 Smith, Mrs H. K., 61 Onslow Gardens, Muswell Hill, N.10.

1926 Smith, Miss M. H., 177 Holly Lodge Mansions, Highgate, N.6. (Orn., Bot., R.)

1927 Solly, Miss B. N., 16 Sydney Street, Chelsea, S.W.3. (Orn.)

1927 Southern, H. N., 67 Holden Road, North Finchley, N.12. (Orn.)

1928 Sparkes, T., A.M.I.E.E., 23 Drayton Road, West Ealing, W.13. (Arch., Bot., Ent., R.)

1928 Sparkes, Mrs T., 23 Drayton Road, West Ealing, W.13. (Arch., Bot., R.)

1922 Spooner, Herman, 21 Musgrave Crescent, Walham Green, Fulham, S.W.6. (Orn., Bot., Arch., R.)

1927 Stanley, S. F., Eversley, The Crossways, Gidea Park, Essex. (Arch., Orn.)

1931 Story, P., 8 Alvanley Gardens, Kilburn, N.W.6. (Orn.)

1931 Story, Mrs J., 8 Alvanley Gardens, Kilburn, N.W.6. (Orn.)

1920 *Stowell, H. S., L.R.I.B.A., 26 Queen's Gardens, Ealing, W.5. (Arch.)

1927 Swain, A. M., 436 Blandford Road, Beckenham, Kent. (Orn.)

1930 Swayne, F. G., M.A. (Cantab), M.B., M.B.O.U., Beulah Spa Hotel, Norwood, S.E.19. (Orn.)

1928 Talbot, G., F.E.S., Mon plaisir, Wormley, Surrey. (Lep.)

1930 Tassart, Miss O. F., 36 Alfriston Road, Clapham Common, S.W.11. (Arch., Orn.)

1926 Taylor, Mrs K., The Vine House, Sevenoaks, Kent. (Orn.)

1930 Thacker, D. M. D., Broom Lodge, 168 Chase Side, Old Southgate, N.14. (Arch., Col., Aqua.)
1920 Thomas, Mrs G. E., 9 Talbot Road, Isleworth, Middlesex. (Orn., R.)
1927 Thresher, Miss G. A., 34 Henrietta Street, W.C.2. (Arch., Ent., Plant Galls., R.)
1931 Tours, H. J., 8 Harvard Road, Gunnersbury, W.4.
1892 Tremayne, L. J., F.Z.S., Avenue House, 21 Northumberland Avenue, W.C.2. (Bot., Lep., Arch., Plant Galls, Orn., R.)
1908 Tremayne, Mrs, Avenue House, 21 Northumberland Avenue, W.C.2. (Orn., Arch., Bot., R.)
1923 Trench, R. H., Hall Barn Cottage, Beaconsfield, Bucks. (Orn., R.)
1925 Tucker, Leslie F., Danebury, The Chine, Grange Park, Winchmore Hill, N.21. (Lep.)
1927 Veitch, Miss A., 79 Shirley Gardens, Faircross, Barking, Essex. (Arch.)
1929 Venour, Miss D., 54a, Dennington Park Road, N.W.6. (Orn.)
1927 Waller, G., 88 Beckenham Road, Beckenham, Kent. (Orn.)
1925 Ward, Bernard T., 24 Long Deacon Road, Chingford, E.4. (Bot., R.)
1920 Watkins, Miss H., 12 Connaught Avenue, East Sheen, Mortlake, S.W.14. (Orn., R., Bot.)
1929 Watson, T. C., 3 Priory Road, Hornsey, N.8. (Ent.)
1926 Watt, Hugh Boyd, 90 Parliament Hill Mansions, Lissenden Gardens, Kentish Town, N.W.5. (Orn., Ecology, Zoo., Bot.)
1925 *Watt, Mrs Winifred Boyd, 90 Parliament Hill Mansions, Lissenden Gardens, Kentish Town, N.W.5. (Orn.)
1893 Wattson, R. Marshman, 32 St Andrews Road, Stoke Newington, N.16. (Arch., Ent.)
1928 Weeks, Claude, 7 Paynesfield Avenue, East Sheen, Mortlake, S.W.14. (Orn.)
1929 Welch, John J., 19 Alexandra Road, Walthamstow, E.17.
1929 Wheeler, E. P., F.R.I.B.A., Park Lodge, Park Road, Sutton, Surrey. (Orn., Arch.)
1930 Whitbread, R., 6 Meadow Way, Weald Village, Harrow, Middlesex. (Arch.)
1913 Wilde, Mrs C. L., Lindfield, Marshall Road, Godalming, Surrey. (Arch., Bot., Plant Galls.)
1922 Wilkinson, E. B., F.L.S., 75 St Mark's Road, W.10.
1880 Williams, C. H., 5 Lower Belgrave Street, Eaton Square, S.W.1. (Lep.)
1930 Williams, Miss P. H., Down Pautiles, Westgate-on-Sea, Thanet. (Orn., Bot.)
1928 Wilson, J., 115, Canterbury Road, Harrow, Middlesex. (Orn., Bot.)
1931 Wing, J. S., 21 Cheyne Gardens, Chelsea, S.W.3. (Orn.)
1929 Witherby, H. F., M.B.E., H.F.A.O.U., F.Z.S., M.B.O.U., 12 Chesterford Gardens, Hampstead, N.W.3. (Orn.)
1922 Wright, W. A., St Omer, Beresford Road, Chingford, E.4. (Orn.)

Branch Associates:

1929 Appleton, Miss, Moorlands, Sewardstone Bury, Chingford, E.4.
1929 Appleton, Mrs., Moorlands, Sewardstone Bury, Chingford, E.4.
1927 Blake, Trevor J. S., 102 Station Road, Chingford, E.4. (Arch., Micr.)
1927 Boardman, Mrs Stuart, 45 Empress Avenue, Woodford Green, Essex. (Orn., Ent.)
1930 Brightman, Miss A., St Osyth, Hempstead Road, Upper Walthamstow, E.17.
1927 Chappell, Miss M., Monkhams End, Monkhams Lane, Woodford Green, Essex.
1910 Cox, Oswald F., Croftdown, Shepherd's Hill, Highgate, N.6. (Bot.)
1928 Culpin, Miss N., Airlie, The Avenue, Chingford, E.4.
1922 Dupère, Miss Frances, 87 Station Road, Chingford, E.4.
1920 Gain, Mrs E. R., 49 Buxton Road, Chingford, E.4.
1926 Gamble, Mrs H. M. A., 9 Park Hill Road, Chingford, E.4.
1927 Gamble, Miss E., 9 Park Hill Road, Chingford, E.4.
1926 Gamble, Miss Winifred, 9 Park Hill Road, Chingford, E.4.
1920 Hart, Miss H., The Green Farm, Chingford, E.4.
1927 Holland, H., 27 Victoria Road, Chingford, E.4.
1928 Holland, Miss M., 27 Victoria Road, Chingford, E.4.
1928 Langford, R. E., 17 Brodie Road, Chingford, E.4.
1925 Mancell, W. A., 22 Connaught Avenue, Chingford, E.4. (Orn.)
1911 Mathieson, Miss M. L., 7 Crescent Road, Chingford, E.4. (Meteorology).
1931 Overton, G. H., 44 Warren Road, Chingford, E.4. (Orn.)
1930 Penwarden, Miss C., 39 The Avenue, Chingford, E.4.
1927 Pettit, Mrs S., Colham, 2 Victoria Road, Chingford, E.4.
1927 Pettit, S., Colham, 2 Victoria Road, Chingford, E.4.
1930 Pinniger, E. B., 19 Endlebury Road, Chingford, E.4. (Ent.)
1920 Proctor, Mrs E. M., 10 Woodland Road, Chingford, E.4.
1927 Read, Mrs E. J., 33 Eglington Road, Chingford, E.4.
1927 Read, Miss P., 33 Eglington Road, Chingford, E.4.
1925 Saul, H., Barclay's Bank, Chingford, E.4.
1931 Saunders, M. E., 57 Beresford Road, Chingford, E.4. (Bot.)
1930 Shadforth, Miss G. H., 35 Victoria Road, Chingford, E.4.
1930 Shadforth, W. R., 35 Victoria Road, Chingford, E.4.
1903 Stevenson, H. E., F.C.S., 22 Wilton Grove, Wimbledon, S.W.19. (Chem.)
1927 Stopps, W. E., 6 Gordon Road, Chingford, E.4.
1927 Unwin, Mrs E., 7 Mount View Road, Chingford, E.4.
1927 Wilkes, Miss L., 24 Woodland Road, Chingford, E.4.
1929 Youé, Miss, 46 Station Road, Chingford, E.4. (Bot.)

Country and School Associates:

1924 Bailey, Mrs Stephen, 45 Bridge Street, Godalming, Surrey.
1907 Bickham, Spencer H., Underdown, Ledbury, Herefordshire. (Bot.)
1908 Bostock, E. D., Oulton Cross, Stone, Staffordshire. (Lep.)

1924 Collins, Miss Florence, School of Gardening, Clapham, near Worthing, Sussex. (Orn.)
1929 Correspondent, The, Natural History Society, St John's School, Leatherhead, Surrey.
1892 Culpin, Millais, M.D., F.R.C.S., Meads, Loughton, Essex. (Biol.)
1926 Farthing, Miss E., 5 Oakhill Road, Bradford Road (W.), Batley, Yorks. (Arch.)
1930 Foster, Mrs S., 12 Victoria Road, Bridgnorth, Shropshire. (Orn.)
1898 Hall, L. B., F.L.S., Lingdene, King's Avenue, Parkstone, Dorset. (Bot., Plant Galls, Biol., Geol., Micr.)
1923 Hardiman-Nash, K. O., Nightsgift, Highwood, Ringwood, Hants. (Orn.)
1923 Hardiman-Nash, Mrs E. G., Nightsgift, Highwood, Ringwood, Hants. (Orn.)
1928 Harrisson, T. H., M.B.O.U., The Croft, Ongar Hill, Addlestone, Surrey. (Orn.)
1927 Harvey, F. B., The Nook, Rhodes Minnis, Eltham, Kent.
1915 Hopkins, Prof. Sir F. Gowland, M.A., M.D., F.R.C.P., P.R.S., 71 Grange Road, Cambridge. (Biochemistry.)
1929 Hose, Miss M. M., Stafford House, Shelley Road, Worthing, Sussex. (Orn., Bot., Ent.)
1928 Jones, E. I., 50 William Street, Hampstead Road, N.W.1. (Ent., Orn.)
1929 King, W. F. W., Blue Coat School, Aldworth's Hospital, Reading, Berks.
1902 Miller, Miss E., The Croft, Rainsford Lane, Chelmsford, Essex. (Lep.)
1905 Moore, J. W., Middleton Dene, 151 Middleton Hall Road, King's Norton, Birmingham. (Lep.)
1930 Nicholson, C., F.E.S., Nansgwithick, Tresillian, Probus, Cornwall. (Ent., Bot., Orn., Astr.)
1918 Pike, Oliver G., F.Z.S., M.B.O.U., The Bungalow, Leighton Buzzard, Beds. (Orn.)
1914 Studd, E. F., M.A., B.C.L., F.E.S., Exeleigh, Starcross, Devon. (Lep.)
1928 Thoday, A. G., 31 Upper Brook Street, W.1. (Bot., Ent.)
1904 Ward, J. Davis, Lymehurst, Grange-over-Sands, Lancs. (Lep.)
1924 Welch, R. J., M.Sc., M.R.I.A., 49 Lonsdale Street, Belfast.
1929 Willcox, P. H., Emmanuel College, Cambridge. (Ent., Bot.)

NOTE.—The following abbreviations are used in the above lists:—Api., Apiculture; Aqua., Aquaria; Arch., Archæology; Ast., Astronomy; Biol., Biology; Bot., Botany; Chem., Chemistry; Col., Coleoptera; Conch., Conchology; Dipt., Diptera; Ent., Entomology; Ethn., Ethnology; Geol., Geology; Hem., Hemiptera; Hym., Hymenoptera; Icht., Ichthyology; Lep., Lepidoptera; Mam., Mammalogy; Micr., Microscopy; Neur., Neuroptera; Orn., Ornithology; Orth., Orthoptera; Ool., Oology; R., Ramblers' Section; Rep., Reptilia; Zoo., Zoology.

*Signifies a Life Member.

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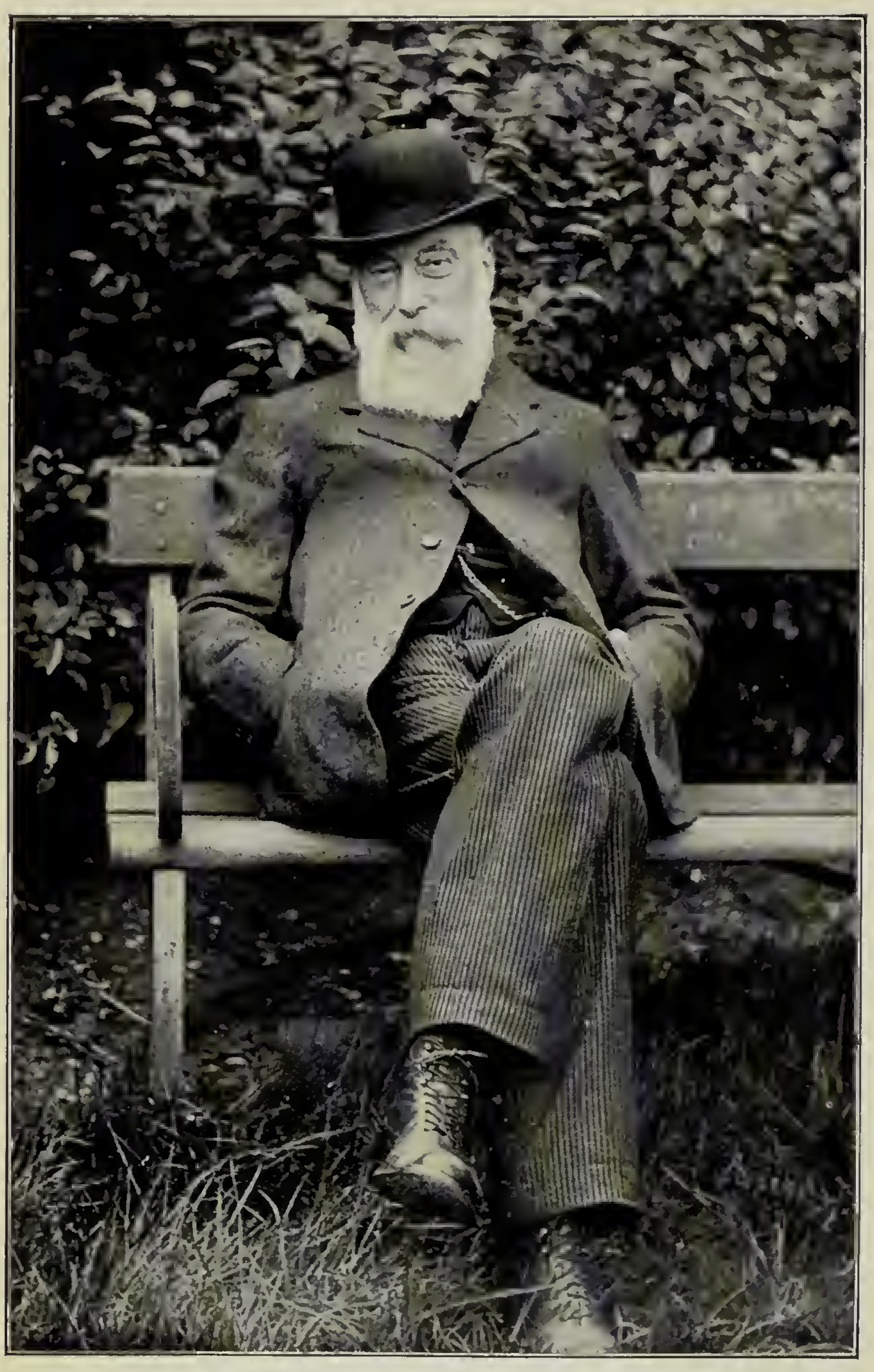

ARTHUR WILLIAM MERA,
President of the City of London Entomological and Natural History Society,
1902-13.

Obituary.

ARTHUR WILLIAM MERA.

Arthur Wm. Mera died on the 21st July 1930 at the age of 81. By his death the Society has lost its oldest member and the Entomological world one of the last of the exclusively " British " lepidopterists of the Victorian era.

Mr Mera was essentially a field naturalist, and he had a first-hand practical knowledge of the habits and haunts of the British butterflies and moths such as could be matched by few of his contemporaries. It could hardly be otherwise for he told us, in a paper read before the Society not so very long ago, that his entomological proclivities took a definite shape at the age of seven; and we know that from that early age up to within a few weeks of his death he was an ardent field-worker. Much of his earlier work was done in localities which no longer exist such as the extensive Hammersmith marshes of the sixties; and his collection, now housed at the Essex Museum, Stratford, contains quite a number of insects from that district. The marshes and their peripheral vegetation produced such species as *Calamia lutosa*, *Nonagria typhae*, *Notodonta ziczac*, *Tethea subtusa* and *Smerinthus ocellatus*; while not far away the country yielded such things as *Sphinx ligustri* and *Arctia villica*; and even, strange to say, one example of *Stauropus fagi*, which is still in the collection. Other happy hunting grounds—now sadly reduced in the matter of productivity—were Wimbledon Common, Coombe Wood, Epping Forest and Chattenden Roughs in Kent. The latter was, of course, a celebrated locality as the pages of Edward Newman's *British Butterflies and Moths* testify; and Mr Mera saw there on one occasion quite a number of *Apatura iris*, though he failed to make a capture. Indeed ill-luck pursued him to the end so far as that insect was concerned; and he told the writer, with a distinct tinge of disappointment, that in all his long career he had failed to catch a single " Purple Emperor." But even in those early years Chattenden was fast losing the reputation it had just a century ago; and in his later days Mr Mera did not consider it worth working.

Of expeditions to places further afield the most memorable were his summer-holiday visits to Clacton—then a village reached by road from Colchester—and to Ipswich; and he enjoyed recounting how, in the company of a local " character," he had collected from a closely-guarded game-preserve, from which his companion had been ejected on the previous day, a sufficient quantity of the larvae of the scarce *Fidonia conspicuata* to ensure to his cabinet an ample series. England was a bigger country in those days when railways were restricted and automobiles were not; and there can be no doubt that for thrill, adventure, and enjoyment the visits of Mr Mera and his friends to Wicken Fen, the New Forest, the Cotswolds or Witherslack were every bit as productive as the expeditions which a later generation makes to Switzerland or

Southern France. But unlike the later generation, Mera was not able, as a rigidly "British" lepidopterist, to find fresh fields and pastures new as the old ones became worn out; and it was a somewhat melancholy matter for him to witness the gradual disappearance of his game from its old haunts. It would have rejoiced him not a little during the wearisome weeks of his last illness could he have known that the most graceful of British butterflies, namely, *Limenitis sibilla*, was to be seen on the wing in the glades of Epping Forest, from which it had been absent for a good half century.

Mr Mera was elected a member of the City of London Entomological and Natural History Society in 1887, just after its removal to the City, and when the Society joined with the North London Natural History Society to form the London Natural History Society, he continued to be a member, and remained so up to the time of his death. For several years in succession he was President of the City of London Society; and in that capacity he delivered annual addresses reviewing the entomological work of the year. He was also for many years a member of the Essex Field Club.

His contributions to entomological literature were not as frequent as might have been expected, apart from notes on topics of current interest such as the earliness or lateness of seasons, the abundance or scarcity of insects and so forth. The phenomena of variation as exemplified in British insects greatly interested him, and he bred local forms and races in large numbers, such as the well-known British races of *Aplecta nebulosa*, *Boarmia repandata* and *Spilosoma lubricipeda*. Notes of some length on the last-named species were published in the *Transactions* of the City of London Society for 1899; and three years later he contributed to the same publication an interesting paper on *Stauropus fagi*. His last paper of a major character was published in the *London Naturalist* for 1925, and dealt with the increase of melanism in British Lepidoptera during the preceding half century. The subject was one which had long engrossed his attention; and he continued to take the greatest interest in it to the end.

J. A. S.

WALTER CHARLES GRUBB.

It is with deep regret that we have to record the death of one of our oldest members, Mr Walter Charles Grubb, who died at Barberton, Transvaal, in March 1930, after a severe illness.

Mr Grubb was one of the four original members of the Clapton Naturalists' Field Club, which was started in 1886, and which, after several stages of evolution, eventually became the North London Natural History Society. A photograph (taken in 1888) appeared in the last number of the *London Naturalist* showing a field-excursion group at Folkestone containing Mr Grubb and the three other original members.

In his early days he was interested in entomology, but being a man of many parts, he acquired considerable knowledge of chemistry and mineralogy and was also an enthusiastic student of music and art. He read several papers in the early days of the Society and held office as Vice-President for a number of years. After leaving the Grocers' Company's School at Hackney Downs he studied for some years at the Royal School of Mines, Kensington, and when about 24 years of age he went to South Africa and was engaged as a manager in gold-mining and prospecting.

He afterwards returned to London and was in business until about 1905, when he went out again to South Africa and settled down at Barberton and practised as an assayer until the time of his death. During this period he was an Associate of the North London Natural History Society, and in addition to his business activities, he was a keen student of Astronomy, and acted as conductor of the local Orchestral Society, producing several operas by Gilbert & Sullivan and other composers.

Mr Grubb was twice married, his first wife being Miss Jenny Nixon, one of whose brothers, Mr A. G. Nixon, was a member of the Society in its early days. He leaves two grown-up sons and one daughter. In October 1926 he married Miss Bertha Smith, sister of Mr C. B. Smith, one of the original members of the Society, and she accompanied him to Barberton, and still resides there.

He was a man of exceptional attainments and also of great personal charm, of high principle, and a loyal friend. His death (at the age of 59) was keenly felt not only by the little community at Barberton in which he was a leading figure for so many years but also by his relatives and friends in England, many of the latter being still members of the London Natural History Society.

C. B. S.

Mr D. J. Mounsey, who died on 8th November 1930, was not known to many members of the Society, as he did not attend the meetings regularly, and when there seldom spoke. Those, however, who came in contact with him found that his retiring disposition concealed a wealth of knowledge of the Macro-lepidoptera, based on keen field work—a knowledge which he was always ready to use for the benefit of his friends. His sudden death from heart failure has left another gap in the ranks of our older lepidopterists.

Mr Henry T. Payne, who died on 9th February 1930, had been a member since 1901. Of late years he had not been seen much at the meetings, but he retained his interest in Lepidoptera up to the end and sent in occasional notes of species seen in his district

At the meeting of the Society held on 3rd February 1931, the President announced the recent death of Sir Andrew Balfour, Director of the London School of Hygiene and Tropical Medicine, and a vote of condolence with his relatives and colleagues was passed.

Although not a member, by the death of Sir Andrew the Society suffers a very real loss. We are indebted to him for inaugurating the cordial relations which exist between the School and ourselves, and for many acts of courtesy and consideration. It will be within the recollection of those of our members who attended the annual dinner in March of last year, that Sir Andrew, who was accompanied by Mr Harris, the Secretary of the School, was the principal guest of the evening. On that occasion he made a very amusing speech, and charmed everyone by his cordiality.

He was a great personality, and a worker in many fields. An old Cambridge Blue, he was in his youth an athlete of some note. He served with distinction as Surgeon in the South African War, and subsequently held various important medical appointments abroad. He was created K.C.M.G. last year, and was also LL.D. and F.R.C.P., besides holding other degrees. He was President of the Scottish Rugby Union. He was, further, a novelist of repute and the author of many medical works. His charm was apparent to all, and all who knew him held him in high esteem. The world is the poorer by his loss, and our Society, with many others, has much cause to regret it.

The Unseen Will.

By LAWRENCE J. TREMAYNE, F.Z.S.

Presidential Address delivered 2nd December 1930.

A PRESIDENT who has no pretensions to being a scientist, and no special subject of study, is necessarily confined to a topic of general interest, and cannot hope to treat even this in a scientific manner The most general subject of all, and the one that interests every one of us, is Life, and it is upon this subject that I propose to say a few words this evening. But let me say first of all that I am fully aware of the drawbacks and difficulties of so doing.

I need not say that I am not going to attempt any definition of Life. Where so many have failed, it would be hopeless for me to try. But I may say that, as far as I can understand, there are two main views of Life. One holds that there is no essential distinction between the animate and inanimate kingdom, and that Life as we know it is, or at any rate may be, merely evolved from the inanimate. The other school holds that this view is a degradation of Life. That Life, while it cannot be defined, is to be treated as something distinct and capable of study, and not for one moment to be deemed to have evolved from the merely inanimate.

The first of these views was most ably set forth in the famous Presidential address delivered by Professor Schäfer (as he was then) to the British Association at Dundee in 1912.

Schäfer definitely put forward the view that there was no actual essential difference between animate and inanimate matter, that is to say between the living and the non-living. He proceeded to put this view to the test, by taking the various phenomena of Life, movement, assimilation and disassimilation, reproduction, feeding and so forth, and showing that each one was not, as was formerly supposed, peculiar to the animal and vegetable kingdoms, but that something not essentially different existed, or could exist, in the inanimate kingdom also. He then explained that the existence of Life seemed to depend on the presence of certain salts, and proceeded to argue that it was at any rate, possible, perhaps even probable, that life in its lowest forms had been evolved from inanimate matter. He went further and suggested that very likely the process was still going on. He explained certain reasons why it would be very difficult for us to find it out. In the first place it would probably be evolved in places which were mostly beyond our reach. In the second place, the newly evolved life might be difficult to recognise. In the third place, the lowest forms of all would be apt to be preyed upon by the forms of life immediately above them, and thus, at the present day, would be unlikely to survive. I strongly advise all who are interested in the subject to read this address. It made a great impression on me when I first read it eighteen years ago, and when I knew that I had to address you this evening, the first thing I did was to send for this address and read it again. It impresses me now even more. I regard it as a masterly composition, both in a scientific and a literary sense. And incidentally it concludes with the most beautiful view of death that I have ever read—a death that it is a perfect pleasure to read about.

For the other view, I turn to another Presidential address, entitled "The Place of Biology in Human Knowledge and Endeavour," by Dr J. S. Haldane, delivered before our own South-Eastern Union of Scientific Societies in 1915. I am bound to say, however, that I find his views much more difficult to describe and summarise. He is frankly indignant with Schäfer. He calls his theory—very aptly—a mechanistic theory of Life. His main points seem to be that biology is an independent science; that it must be investigated as an independent whole; that the various parts of which the body is composed function with an almost unbelievable and indescribable delicacy and constancy of reaction, which is inexplicable if Life is to be regarded as having evolved on mere mechanistic lines; that the idea of organic determination leaves unexplained a great mass of what we actually perceive in connection with Life; that Schäfer's theory can have no connection with conceptions of Personality and Duty. Although Dr Haldane nowhere uses the term, I think I do him no injustice in believing that his real objection to Schäfer's theory is that it leaves out all consideration of what we call the Spirit.

I am not going to express any decided opinion between those two views, though I am inclined to think that Schäfer perhaps has the best of the argument. At any rate he is not dogmatising nor is he attacking anybody. He is only working out a theory of possibilities from observed scientific facts, and putting them forward as a theory of possibilities only. Haldane suffers from the disadvantage of being indignant. He regards Schäfer's reasoning as radically fallacious. But I cannot see his point that it detracts from the dignity of Life. If life, or the potentiality of life, be already existent in all matter, it seems to leave the mystery just as inscrutable as ever. I am reminded of Herbert Spencer's dictum, that no explanation can ever be given of anything in this world which does not give rise to the question, what is the explanation of that explanation? Try as he will, Man can never achieve finality in any line of enquiry whatsoever. He can only push the line of enquiry farther back. That is all that Schäfer seems to me to have done, supposing him to have achieved even that much. But I cannot see that it matters to the dignity of Life, or of the Unseen Power to Whom life is due, whether the potentiality of life is existent in all matter, or whether it has been breathed into matter from without at certain stages of its development. In one sense life and the potentiality of life must mean the same thing. And it is possible that Sir Edward Schäfer and Dr Haldane are only looking at the same thing from different angles.

But there is another point which emerges from these two addresses, and which is common to them both, that has made a far greater impression upon me. And that point is this: that the Life, which we prize so highly, the Life which we regard as such a wonderful individual thing, so personal, so inexplicable, so mysterious, is in itself no more than an aggregate life. No doubt in a sense it is a single individual life for each one of us, but that single individual life is only a total made up of myriads of other infinitesimal tiny lives. You and I and all other living beings in this world, animals and plants both, are made up of a vast number of tiny living cells, and each of these cells has a separate life of its own. You may say that the life of each cell is inseparable from the life of its aggregate, but that is not quite the case. When we die, it does not follow that all the cells in our body die at the same time. On the contrary, we know that some of them remain alive for a time at least. Transferred from their proper environment and put in certain favourable conditions, they can be kept alive for comparatively long periods—how long has not yet been determined. What we know as death, is only the death of the aggregate. The total machine ceases to be as a total machine, but the separate parts of which it is composed remain, and for a time they remain living. Some of these cells may die and the rest may continue to live. As a matter of fact, this is constantly happening. Certain of the cells in our body are constantly being used up, so to speak, or, in other words, dying, and their places are being taken up by others. But the death of many of them does not affect the vitality of the body as a whole. If, however, a few cells, constituting a vital part, be injured or destroyed, then the whole machinery of the body, so to speak, is brought to a standstill, and the life, the aggregate of life, containing those cells appears to be dead, and is said to be dead. But that is not necessarily the conclusion. It may be that, owing to the injury to the cells, it is only the supply of oxygen that has failed. Oxygen can be pumped into the body. The machine may be set going again, and life may be restored. And there we get the mystery of artificial respiration. You can set the whole machine going again, because the living cells composing it are not dead; it is only that the most important of them have been temporarily injured or put out of action, and have, therefore, stopped the works.

Now these cells I believe in all cases act for the benefit of the aggregate life which they compose, and they may be said to act under its direction. That direction, however, must be for the most part wholly unconscious. The most familiar instance, which will be readily understood by all of you, is that of the white corpuscles of the blood. These, as is well known, are not the nourishing part, but are the fighters or scavengers as you may prefer to term them. That is to say, whenever any invading germ enters the body, these little cells immediately attack it, and eat it up. And for that purpose they collect together from all parts of the body towards the infected spot. That is how we are constantly resisting disease. The white corpuscles of our body are constantly fighting the hostile germs which surround us at all times, and which are ready to enter at the least opportunity.

Now this seems to me a very strange and wonderful thing. Here I stand lecturing to you, believing myself to be a personal individual life, but in reality I am an aggregate life, composed of an infinitesimal number of tiny cells, who are acting under my direction, and in my interests. I am not conscious of their presence. I only know of their existence because science tells me of it. The question arises, are they conscious of my existence. Each of these tiny cells, as I understand it, is alive just as I am alive. Do they know what they are doing when they rush to my assistance? Have they any consciousness of their own? Or anything which, relatively speaking, corresponds to the consciousness of their whole? Personally, I doubt it. I do indeed believe that these cells may possess consciousness in the same way that a new born baby possesses consciousness, and that consciousness, or perhaps I should say the potentiality of consciousness, may be said to be inseparable from all life. But I doubt if they know what they are doing or if they are at all aware of my existence.

The question arises also: if I, believing myself to be a separate individual, am in reality only an aggregate composed of a great many other lives, is it possible that I in my turn may be no more than a living cell in the possession of some other aggregate life of whose existence I am entirely unaware? I think it more than likely. I cannot, of course, prove it or even suggest any proof, but I think it likely because it seems to me the general plan upon which Nature works. According to all our experience, everything is part of something greater on the one hand, and on the other is itself only composed of parts. That seems likely to be as true of Life as of matter. I would add that it seems to me to be a law of Nature, though I have nowhere seen it stated, that every whole is something different from the sum total of its parts.

If then, as I think likely, we are only, relatively speaking, molecular cells in some greater aggregate, the question arises what that aggregate can be, and whether it is possible for us to have any conception of it. Pondering over this matter, it occurred to me to wonder for a moment, whether the aggregate might be the species, and that led my thoughts into a somewhat different channel.

The Species may be called the permanent standby of a Natural History Society. It is the one subject above all others which is never far from our discussions. We hear comparatively little about individuals, but we are constantly being told in a hundred varying ways what the species does, and does not do; how it acts under certain given circumstances; what it decides and so on and so forth. For the past forty years I have been listening to statements of this kind, about the Species in this Society, and yet there is one statement which I have never yet heard put into plain words, but which I submit has been most plainly implied again and again, and that statement is that the Species itself is a definite entity just like the individual, not merely a name which we give to the sum total of all individuals of the same kind, but a definite entity with a will of its own, and with, somewhere or another, a directing brain or mind or something corresponding to it. Let us consider this matter for a few minutes a little more closely.

When Darwin launched his great theory of Natural Selection, as far as I understand it, he had no thought of putting forward the development of the species by other than what I may call mechanistic means. The species varies accidentally. I know the term accidentally is inaccurate, but we must use it for want of a better. The variations, if beneficial to the individual, and therefore to the race, are preserved, transmitted to and often accentuated in the offspring. They thus tend to accumulate and in time a new species is formed. But in this theory there is no idea of the species having an independent will of its own, nor do I think that Darwin ever conceived such an idea. Darwin was, in my judgment, what we should now call a materialist. He had, indeed, a wonderfully broad and open mind, receptive up to a point to all new factors and possibilities. But they had to be, as far as I can see, factors and possibilities which were explicable according to the laws of organic life as he knew them. On anything that might tend to approach what for want of a better term I will call the Spirit, Darwin, as far as I can see, was a sceptic. I am judging him merely on his letters and on such of his works as I have read. He had I believe now and then some faint glimmerings that there might after all be laws beyond his ken, as when he was struck at times with the wonderful response to stimulus in plants, amounting to almost what we should term intelligence in animals. But they must have a mechanistic explanation, and I think that is as far as Darwin ever got.

But it seems to me that of late years human thought has advanced considerably upon this topic. Whilst the general structure of Darwin's creed still holds good, it seems now to be generally recognised that something more than mere accident or mechanism is required. I am not speaking of religious requirements, but of scientific requirements alone. It seems to me that the species itself is now granted a certain amount of will-power. If this be not implied in certain statements that are constantly made, then I do not understand what they mean.

Let me take a few instances. Some years ago a very interesting theory was put forward in this Society, that a species, just before it was approaching extinction, sometimes tended to vary in many and unusual directions, the idea being that it was thus trying to hit upon some variation which would ultimately have the effect of saving or prolonging its life as a species. I have been trying to trace this idea to its source. I first of all attributed it to our Honorary Vice-President, Prof. Greenwood, but it seems I was mistaken, for Prof. Greenwood says it did not originate with him. I then wrote to another Vice-President, also one of my predecessors in this Chair, our old friend Mr Robbins, admittedly one of the best and soundest scientific brains our Society possesses. Mr Robbins kindly allows me to quote his reply: "I know the idea you mention of a dying species breaking out into variation, but cannot remember that it was attributed to Greenwood. I rather think it was one of Arthur Bacot's notions, and I know one of the instances that seemed to support it was the extraordinary variations we found in *Zygaena trifolii* Esp. at Broxbourne, where the species had a very precarious hold. Whether there is anything in it or not, I know that as a theory it has been in my mind for years, and on more than one occasion facts observed seemed to give it support." That is sufficient for my present purpose. How a species could act thus unless it had a certain amount of will-power to decide for itself is beyond me to determine. Though there is indeed one alternative which I will deal with later on.

Another instance. Our late President, Mr E. B. Bishop, in the Presidential address which he read to this Society in December 1922, dealt with the extreme "Localness" of certain species. He set out a number of instances, both in butterflies and plants, where the species had remained confined to very restricted spots for numbers of years, although there seemed to be absolutely no reason why they should not range more widely. In the case of the butterflies their food-plant was abundant, and their wings provided means of transport. In the case of the plants, special means of transport were shown in most instances, and the localities to which they were restricted seemed far from being the only suitable ones. Yet both butterflies and plants remained strictly local, and the only theory Mr Bishop had to put forward was that they did so by their own will. Again this seems to me a clear instance by implication of species having wills of their own, though the manifestation of those wills can only be made evident through the individuals of the species. I may say in parenthesis that it seems to me that Mr Bishop's theory has received some little support by what has happened since he gave his address. One butterfly which he named, the well-known White Admiral (*Limenitis sibilla* L.) and one which he did not name but to which his remarks equally apply, the Comma butterfly (*Vanessa* or *Polygonia c-album* L.) have since then been extending their range and spreading into all sorts of localities in the South of England. Our own Entomological Section has a number of records of them. It remains to be seen whether the species decides to extend its range permanently, or whether it is merely a temporary overflow and the species will ultimately revert to its former exclusive haunts.

But, you may say, this is all very well, but these are mere opinions. Can you give us any facts which are more than mere opinions?

I am afraid it is rather difficult to get outside the realm of speculation, but I will give some instances which seem to me to be in point. All, I think, have been mentioned here before.

The first is taken from the human race. I would simply mention our own behaviour during the Great War, more especially during its early stages. Never before or since in our own day has been bred such a multitude of hasty engagements, improvident marriages, irregular connections, and subsequent divorces. It was a common-place saying at the time that all the women of the country had gone off their heads, and were unable to see anything in khaki without running after it.

Now, why was this? I suggest it was due not so much to temporary aberration on the part of the individuals, as to the age-long instinct of the race. Its best and most promising of sons were going forth to battle, and many of them were not likely to return. From the racial point of view one thing above all others was necessary, and that was to provide for the future population. And I suggest that this, and not any temporarily perverted moral instincts, is what really lay at the back of the behaviour of the women at that date, which seemed to us so extraordinary at that time. After all, it is nothing more than what has happened many times before. The love of a woman for a soldier going forth to battle is as old as history.

I am quite sure that not one of the women who rushed so violently after the men of those days had the slightest idea of the reason for what she was doing, that is to say, the governing reason behind it all. I am quite sure that the reasons which were present in their own minds, perfectly honestly and sincerely as far as they knew, were something very different. Reasons of sentiment; reasons of practical utility as applied to individuals; reasons of convenience; reasons, perhaps, of finance. And I believe that all these reasons were sincere. What of that? The human mind, as we know it, is only a surface. It might be represented for the purposes of argument as the cloth on the top of this table, whereas the real mind, the governing part, although it may be beyond our perception, is the great bulk deep down below. The average run of us can see no more than the surface of our minds, and the best and wisest amongst us, those who are most given to introspection, or, as I believe it is now called, psycho-analysis, can do no more than penetrate a very, very few layers of upper covering.

Now I suggest that this behaviour is simply an obvious instance of the working of racial instinct, or if you prefer so to call it, of the behaviour of the species. For in this particular case, the race and the species are not very dissimilar. The will of the species manifested itself in the only way it could manifest itself, that is to say, by the action of its individuals. The individuals, although they thought they were acting of their own volition, were really acting for the benefit of and probably by the direction of their aggregate.

My next example is taken from plants and insects. I mentioned it on the occasion of Dr Bagnall's lecture on the Bacot Memorial Evening last year. I regard it as one of the most remarkable discoveries of modern times. I will not worry you with any long scientific names, which to many of my audience will be quite unfamiliar and have very little meaning. The point of the matter is simply this. That it has now been discovered that certain Orchids, in order to effect their fertilisation by certain species of wasps, mimic the female of that wasp. The male is deceived and attempts the action of copulation with the plant in mistake for its own female. It thus carries away the pollen and fertilises the next plant it visits. This trick was first discovered on the part of *Ophrys Speculum* and other Orchids in Northern Africa, the insects deceived being different in each case, but all belonging to the Hymenoptera.* Two years later another case was reported from Australia,† and again it was an Orchid and a wasp.

Now what are we to make of behaviour of this kind? The astounding part of it, of course, I regard as the behaviour of the plant, not the insect. It seems to me impossible to explain this extraordinary piece of mimicry except on the assumption that the plant possesses some form of intelligence, and such intelligence, if it can be so called, must reside not in the individual, but in the species as a whole. I am well aware I am here on very difficult ground, and a good deal more discovery and a good deal more thought will have to be given to the topic before it can be dogmatised upon with any assurance. Natural selection may have played its part. I am not forgetting the wonderful instances of his theory set out in the Origin of Species. But I cannot see how Darwin would have explained this latest discovery by means of his theory, for we must remember that the variation of a single plant is of no use in this case. It is one plant which exercises the deception; it is the next plant which is fertilised by means of the deception exercised by its neighbour. Here you have a plant example as it seems to me of collective action, or of the species exercising its own will by means of the actions of its individuals.

Another example could probably be found in the Lemming (*Myodes lemmus*). This remarkable creature was mentioned by Mr C. Mellows, M.A., F.E.S., in the valuable lecture which he gave us in 1926 on Migration. It is about the size of a rat, and belongs to a genus of rodents nearly allied to the Voles. Breeding several times in the course of a year, and producing four or five at a birth, its numbers quickly become excessive, and periodically it descends from its native mountains in vast swarms. Many perish on the way, but the survivors finally reach the sea, and then deliberately swim out of their depth and drown themselves. To quote Mr Mellows, this "seems uncommonly like wholesale suicide on the part of a large element in the population to leave the ground clear for the rest." And he goes on to say that in a negative way this must be good for the species, as no doubt it is by adjusting the numbers. But to my mind it is absurd to consider this action of the Lemmings as individual action, or even as a number of individual actions. That an individual creature like the Lemming should voluntarily commit suicide is to me unthinkable. It is the species which is acting. The individual is only acting as a member of the species, and at the will of the species.

Indeed, once we get the idea, we can see, as I think, that all migratory movements are actions of the species rather than of the individual. The individual instincts are for the time being subservient to the will of the species. As an instance of this, it is stated that swallows have been known to desert their young in the nest, when about to join the

*These observations were reviewed by Prof. E. B. Poulton, *Proc. Ent. Soc. London*, ii (1927), pp. 31-33.

†By Mrs Edith Coleman, *Trans. Ent. Soc. London*, lxxvi (1928), pp. 533-539.

migrating swarms. Here you have, as it seems to me, clear evidence of the will of the species predominating.

I said just now there was an alternative possibility. It is this. That the individual may be acting not by direction of the species, but by the direction of some power which is greater than both species and individual. In this connection we must remember that, as I have tried to show that individuals are probably only part of an aggregate whole, so that aggregate may itself be only one of a number of items in a greater aggregate. If we would reach the ultimate aggregate of all, we might find the Deity. But as far as we know the process may of course go on *ad infinitum* both ways. It is limited in fact only by the limitations of our powers of conception.

I hope no one will tell me that I have been likening the individuals of a species to the cells of our body in all respects. I do, indeed, think that the parallel is much closer than might be supposed. It might be urged that the individuals of a species are spatially distinct, being separated from each other by vast distances, and that the cells of our body are not. This, however, is merely relative. The distance between some of the cells of our body may be no less relatively speaking than the distance between individuals of a species. Again, a species consists not only of its present number of individuals but of those which are gone and those which are to come, of its past, present and future in other words. Exactly the same applies to our body. Innumerable of our cells have had their day and expired, their places being taken by others. Innumerable are yet to come as long as the aggregate itself exists. At the same time I cannot claim that the relationship between the individuals of the species to that species is the same as the relationship between the cells of the body to that body. It merely occurred to me in casting about in my mind for an aggregate of which we might form part that the species might possibly be that aggregate. But I do not think it is an aggregate on the same lines, and I think the chances are, that we, in common with every other living cell or aggregation of living cells, may be members of more than one aggregate, and act at times for the benefit of or in the interests of more than one aggregate, according as we happen to be grouped on different occasions.

You may well tell me that this address leads nowhere. It leads only to a terrible tangle of thought bordering on matters which our finite minds will hardly allow us to conceive. The one point which I hope to have brought out is a very humble one. It matters little that learned professors should dispute as to whether Life can possibly be evolved from inanimate matter, or whether such a view be derogatory to the dignity of Life. What does matter, as it seems to me, is that we should see that all forms of Life as we know it are subject to some Greater Power, and that we should attain even the faintest conception of what that Greater Power can be. My ideas may be altogether wrong, but at least they suggest an avenue of thought which may be worth considering. There might seem to be little in common between the cells of our bodies, the women in the War, and the Orchids of

Northern Africa. Yet I think that the cell which rushes to defend my body against the invading germ, the woman who rushes to embrace her lover on the eve of battle, and the plant which imitates the insect for the purpose of deceiving it, have this in common, that they are not acting by their own volition, however much they or some of them may think they are. They are acting in the interests and practically at the direction of the aggregates of which they form part, or alternatively by the direction of some Higher Power still. And I suggest that here is clear evidence—I mean scientific, not religious evidence—of the existence of a Higher Power, whether that Power be the aggregate of the individuals or something Higher still. Deny it as we will; seek to explain it, try to avoid it as we may, the Unseen Will is always there, and we can at times obtain some dim perception of its presence as we grope among the shadows.

Anglo-Saxon Work in our Churches.

By JOHN E. S. DALLAS.

The Substance of a Lecture before the Archaeological Section on 18th September 1929.

THE study of Anglo-Saxon architecture has hitherto never been pursued with that general enthusiasm which has been given to the other periods of church building in England. There have been two reasons; firstly, the existing examples of the period are for the most part somewhat fragmentary, and, secondly, those examples seldom show that dignity of proportion, that unity of purpose and achievement, or that beauty of detail which attract us in the Norman, Early English, and later styles.

The appearance of Professor Baldwin Brown's great work* on the subject in 1903 and of a second edition in 1925 has, however, largely changed the situation; the existing examples are better known, and close investigation of the fabrics of our country churches is now frequently adding to the amount of building which can be definitely ascribed to the Anglo-Saxon period.

Professor Baldwin Brown places the Anglo-Saxon church work in England in three periods, as follows:—

(i) From the Augustinian Mission (A.D. 597) to the end of the 8th century.
(ii) From the end of the 8th century to the middle of the 10th century—the worst period of the Viking invasions.
(iii) From the monastic revival under Dunstan in the middle of the 10th century to the period of the Norman conquest.

Although it is well known that Christianity had been well established in Britain before the coming of the Anglo-Saxons, the latter sent such a wave of Paganism over our island that, for the purposes of this paper, church building in this country may be taken as commencing with the mission of Saint Augustine, sent from Rome to England by Gregory the Great in A.D. 597. Augustine's mission was responsible for many churches in Kent, where he landed, and it is there that we find the earliest remains, viz.:—at St Martin's and St Pancras, Canterbury. It is probable that part of St Martin's actually dates from the time of Romano-British Christianity, but even what is not the original work is Roman brick and other material re-used by the Saxons. At St Pancras the fabric is Roman brick laid horizontally, and in most of these early churches Roman material is much in evidence.

Augustine, of course, brought to England the Roman tradition in church building, and so we find that all of these early Kentish churches were planned with the characteristic Roman feature, the apse, at the eastern end. Certain other provinces of England, on the other hand, were won for Christianity by missionaries trained in the Celtic monasteries, and when we examine the earliest churches in those provinces (e.g., that at Escomb in Durham) we find that they were planned with the rectangular chancel, a form generally in use among the Celtic Christians. In later times—after the Synod of Whitby, A.D. 664—although England had adopted the Roman forms of worship as against the Celtic, the rectangular chancel survived in all except the larger churches, because, presumably, the Saxons found its construction easier.

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*The Arts in Early England—Volume II.

In most cases, when these early churches had an apse it was divided from the nave by a structural screen of three arches, supported either by pillars as at Reculver, Kent, or by piers as at Brixworth, Northants. At the latter place, one of the finest of the first period churches still stands. It was of the basilican plan, but the aisles have now disappeared, and the arcades have been filled in so as to form the north and south walls of the present nave. The arches are turned in Roman bricks, but the technique is poor and clearly Saxon, for the first brick above the impost is laid not horizontally but almost perpendicularly, and is propped up by other bricks laid carelessly. The bricks of the arch proper thus do not radiate evenly from a single centre as they would have done if Romans had been responsible for them, and here again, as in the Kentish examples, we have clear evidence of Saxon reconstruction of materials taken from a Roman building which had been destroyed or fallen into disuse (see Fig. 1).

The second of Professor Baldwin Brown's periods corresponds with that of the worst Viking invasions of England, and we must therefore not expect that many examples will have survived. The art of the Vikings is known to show its influence in the sculpture on the crosses of the Midlands and the North, and this influence also appears in the ornament of certain early churches which are accordingly ascribed to the second period. They do not show any marked variation in planning from those of the other periods.

The finest example is the remarkable church of Deerhurst, Gloucestershire, where Viking influence is seen in certain grotesque animal heads in the western tower and also at the ends of the hood-moulding on the west face of the chancel arch. On the font at Deerhurst we find vine leaf and grape ornament, a motif which disappears in the third period, except on the carved slabs on the tower at Barnack, Northants, where, however, it is much modified and conventionalised. This vine ornament also appears on an opening in the north wall of the nave at Britford, Wilts, which may likewise be taken to be a second period church.

In the west wall of the nave at Deerhurst is a double opening which seems to be a forerunner of those occurring so commonly in third period churches. At Deerhurst the member dividing the openings is rectangular in plan and is equal in thickness to the wall in which they occur, but in the third period churches, the openings are divided by a baluster shaft whose plan is a circle of much less diameter than the thickness of the wall.

Of all the three periods, the second is the one whose characteristics are most difficult to define, and indeed it is often necessary to rely on the absence of features, such as the use of Roman materials, which would definitely connect with the first period, and, on the other hand, of those which, as we shall see, clearly distinguish the churches of the third period.

This last period in the history of Anglo-Saxon church building opens with the enthusiasm of the religious revival under Dunstan, who became Archbishop of Canterbury in A.D. 959. Then later, the devastating incursions of the Danes began to die down as they themselves established a legal share and a political interest in the country. The consolidation of the kingdom under Cnut, and his conversion to Christianity gave a further stimulus to church building, and later came the pious Edward the Confessor who, prior to his accession, had lived in Normandy and who brought over with him fresh ideas in architecture. This resulted in the Saxon buildings gradually approaching in style and in details those of the Duchy; but native methods die hard and we often find a persistence of Saxon features in churches erected even after the Norman conquest. There is, in fact, a period of transition from the Saxon style to the Norman as well marked as that from the Norman to the Early English.

Before considering the characteristics of the architecture in the last Anglo-Saxon period it will be well to notice the developments which took place in the planning of churches in the hundred years of its duration.

It has been pointed out that except in large churches the rectangular chancel superseded that with the round-ended or apsidal plan, and in the small country church of the third period, the typical plan was a rectangular nave with a narrower rectangular chancel. The lateral chapels which were sometimes built in the first period, e.g., at St Pancras, Canterbury, re-appear in the later churches, as at Bradford on Avon, where they had entrances also from outside the church. A variation on this was to bring the lateral chapels much further to the east as at Worth, Sussex, where they occur immediately to the west of the junction of the nave with the chancel, thus making a cruciform plan, but without central tower. The first suggestion of the fully cruciform plan with central tower is at Breamore, Hants, but it is at Stow in Lincolnshire that we see the completely developed cruciform arrangement carried out in a Saxon church on lines which bear comparison with what we find in the Norman and even the Gothic periods.

At Barton on Humber, Lincs, the original building had a plan almost unique among our English churches, for the square tower was the main part of the church, representing its " nave," with a narrower rectangular chancel to the east and another similar building joining the tower on the west, although the western annexe is thought by the Rev. W. E. Varah, Vicar of Barton on Humber, to be part of the nave of an earlier church. The small chancel was swept away when the present nave was built to the east of the tower in the early 14th century, but its foundations were discovered at the end of last century, and the marks of its juncture with the east wall of the tower can still be seen from within the present nave.

The basilican planning exemplified in the first period at Reculver and Brixworth finds a counterpart in the third period at Wing, Bucks, where the piers and arches of both arcades remain, as well as much of the original north aisle, and at Lydd, Kent, where the blocked north arcade and western arch of the Saxon church still form part of the north aisle of the present imposing Perpendicular church.

Turning now to the actual construction of the third period churches, we may say that their walls are as a rule thinner than those in the Norman style, 2 ft. 6 in. may be taken as a rough average; they are high in proportion to the size of the church. The material of which they are built varies with the localities, flints are much in evidence in south-eastern England, but in stone districts, squared and smoothed stones are often used as at Bradford on Avon.

Perhaps the technique which most unfailingly springs to the mind when Saxon work is mentioned is the so-called "Long and short work," and certainly it is a very characteristic Saxon form, although it may occur in churches built soon after the Conquest. Its principal use is for bonding at a quoin or angle made by the junction of two walls (see Fig. 3). It consists of squared stones, upright and flat alternately, the latter bonding into the material composing the walls. In the completed walls the exterior surfaces only of these squared stones are exposed to view and the terms "long" and "short" are applied to them according as they are laid upright or horizontally. This type of construction is also used for the jambs of arches, doorways or windows (see Fig. 4), and the arrangement may be seen in the stones making up pilasters. It is, in fact, the technique most generally in evidence in Saxon work, and although it occurs in the first period as a reconstruction of Roman work, it is in the third that its use becomes most constantly adopted.

The "pilasters" mentioned above form one of the earliest and most striking features to appear in buildings of the third period; we see them lavishly covering the walls of the towers at Earls Barton and Barnack in Northants and Barton on Humber in Lincs, and they are common on Saxon walling over most of England except the North. They are made up of squared stones bonded into the wall and forming strips raised a few inches above its surface. Pilasters vary in width from 4 inches at Earls Barton to 23 inches at the quoins of the chancel at Tichborne, Hants. They often do not reach to the ground, but when they do, they suggest affinity with buttresses; they can, however, have little use in resisting the outward thrust of the wall except in the wide examples, which are rare, and apart from the bonding of the wall in which they are built, their function is largely decorative. Their origin has been very generally held to be a translation into stone of the wooden buildings of an earlier period. Prof. Baldwin Brown, however, suggests an explanation which, to me, seems much more probable, viz., that they are derived from the Roman pilaster, and that the use of them came to us by way of Germany. He adduces among other evidence the pilaster decoration on the 9th century Gateway building of the Abbey at Lorsch in Germany (Fig. 5). A comparison with the pilaster ornament on the second stage of the tower at Barton on Humber (Fig. 6) shows that the underlying principle is the same, although the fluting is missing from the English example and the Corinthian capitals have been simplified into a mere widening of the pilaster strips. Some of the pilasters on the exterior of the chancel at Bradford on Avon, however, do show fluting which suggests the connection with the classical pilaster.

The Saxon pilaster is used not only as a means of breaking the monotony of a wall surface, but very often to ornament large openings such as chancel or tower arches, where the pilaster is set in the wall a short distance from the jambs of the arch and is carried round the curve of the arch itself and parallel with it; a good example is the arch from the nave into the tower at Brigstock, Northants (Fig. 7). In section, these pilasters are usually rectangular, but where they are half-round in section the work is probably of late date (Fig. 8) or even of the Transitional period from Saxon to Norman.

One very striking character in these larger arches is that the voussoirs are usually single stones of the full thickness of the wall—"through" stones; the Normans with their greater skill in arch construction were able to make an arch using squared stones on the faces only and filling in the space between with rubble. Again, the cutting of the voussoirs is often faulty, and, just as we saw at the first period church of Brixworth, they do not radiate regularly from a single centre. A good example is the south door at Daglingworth, Glos., where a small wedge-shaped piece of stone is inserted to fill a gap which would otherwise have occurred in the "key" position of the arch (see also Fig. 4).

While we are on the subject of arches it would be as well to consider that of the mouldings which decorate them in the third period. The simplest form of arch is, of course, that with plain squared jambs and soffit, the lines only interrupted by plain squared imposts at the springing of the arch. Next comes the arch with pilasters such as that at Brigstock mentioned above. A further development takes place at Worth, Sussex, where the jamb of the arch has a half-round section, the soffit remaining squared; the imposts consist of two members, the upper one squared and the lower curved in outline.

At Wittering, Northants, a half-round moulding appears on both soffit and jambs, and a similar moulding surrounds the whole arch opening on both the east and west faces of the wall. The square section pilasters are also present and the imposts each consist of two massive stones slightly cut away towards their lower surfaces. At Clayton, Sussex, the arrangement of moulding is somewhat similar, but the imposts are flat slabs chamfered below, and that markedly Saxon feature the pilaster surrounding the arch opening is wanting. The Clayton arch, in fact, is to my mind less aggressively Saxon than even the magnificent chancel arch of Bosham. This arch, in its dignity and fine proportions worthy to rank with some of the best Norman work, has bases consisting of a circular slab imposed on a square one, with imposts of similar slabs in the reverse order. The moulding shafts are on the lines of those at Wittering or Clayton, except that at Bosham those on the east and west faces are recessed "angle-shafts" and that all have simply carved capitals. Although the pilaster is absent from the jambs, there is a narrow square hood moulding round the arch itself. Bosham has, of course, associations with Earl Godwin and with Harold and the church was no doubt built very shortly before the Conquest.

When we consider the smaller openings in the walls of third period buildings, two forms stand out as most constant types. The first is the double splayed opening used for windows, as in the remarkable discoveries in the north wall of the chancel at Thursley, Surrey (Fig. 2). In this type of window the actual opening is set at about the middle of the wall thickness, and the splays towards the inner and the outer surfaces of the wall are at about equal angles; at Thursley the wooden slabs at the openings still remain, with traces of peg holes, where, presumably, horn or some such material was at one time secured.

The other form of opening is that with two lights divided by a baluster, which we saw had its forerunner in the second period at Deerhurst. The baluster in the third period has a sectional thickness much less than that of the wall, but it supports an impost equal in thickness to the wall, and from this impost spring the two arches, usually round-headed, of the lights. Such openings are used in the walls of the main buildings of the churches, but most frequently in the towers. The double opening commences as a purely Saxon feature, but it persists well into the period of transition to the Norman, when, however, the baluster becomes taller and more slender, and the carving of the capital shows plainly the influence of the Normans. Openings of this latter type are very common in the towers of early churches in Lincolnshire, many of which show none of the other distinctive characters of Saxon work such as long and short work, pilasters or double splayed openings. In these cases we may say that although the towers are Saxon in style and plan, they have been built under strong Norman influence and may in some cases date from after the Conquest.

Although it is necessary for me to omit any examination of the very numerous monumental crosses and grave-covers of the Midlands and North on which so much skill and artistic vigour have been lavished, I cannot refrain from a reference to the subject of Saxon ecclesiastical carving in so far as it occurs in the fabrics of the churches. In the few examples we have, we usually find the work somewhat crude compared with that of the post-Conquest periods, but with a certain vigour and freshness which is sometimes quaint but always interesting. Perhaps the best known pieces are the two angels now inserted high up in the east wall of the nave at Bradford on Avon, and probably originally forming part of a representation of the Crucifixion. At Daglingworth, Glos., there are figures of Christ and of St Peter, and a group of the Crucifixion, but these were found built in the jambs of the chancel arch with the carving hidden from view. They are now built into the nave walls, and are, of course, not in their original positions. Carved Roods, probably of Saxon date, exist at Breamore and Headbourne Worthy in Hants, but they are so

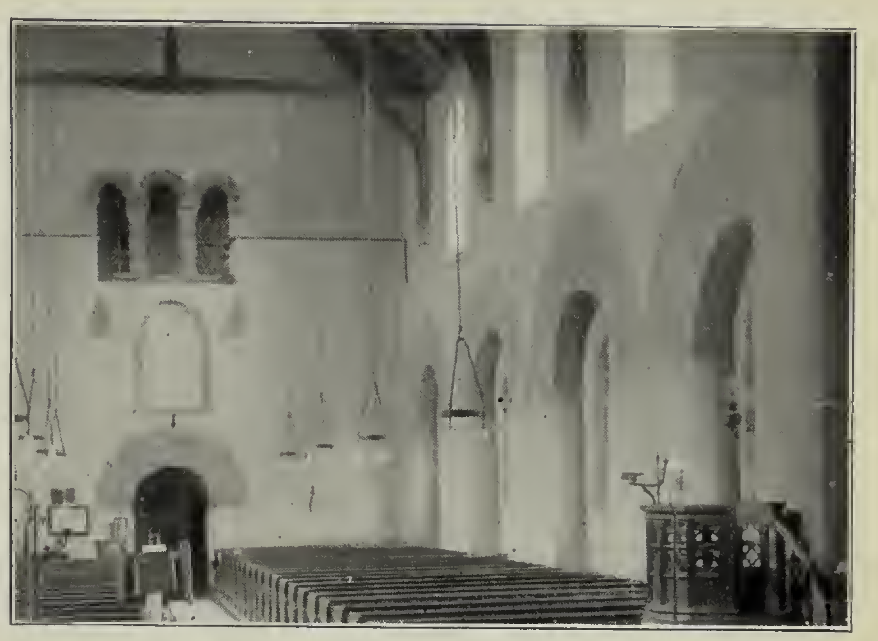

Fig. 1. BRIXWORTH, NORTHANTS—Interior from S.E., showing arches turned in Roman bricks. The triple balustered opening high in the W. wall is of the last Anglo-Saxon period.

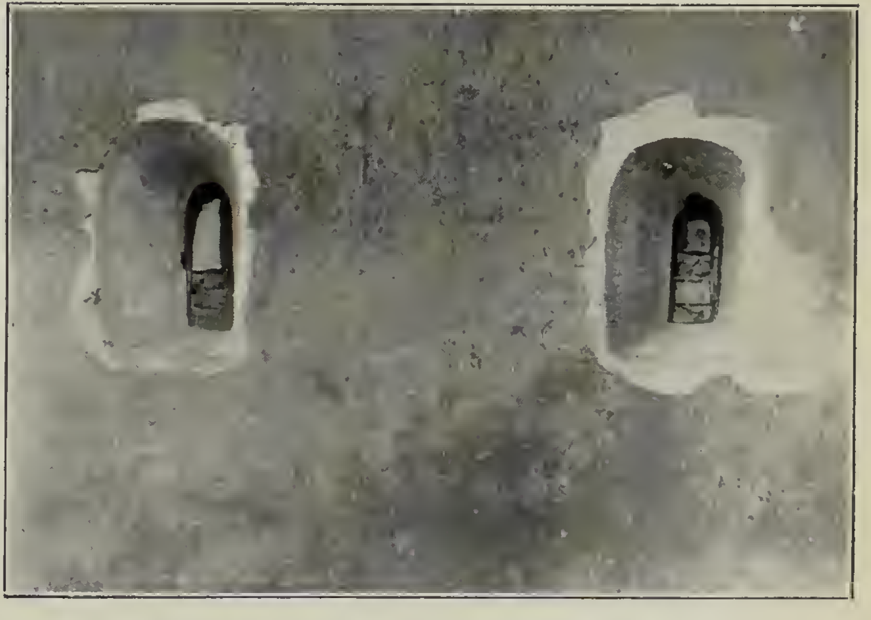

Fig. 2. THURSLEY, SURREY—Double-splayed windows in N. wall of Chancel.

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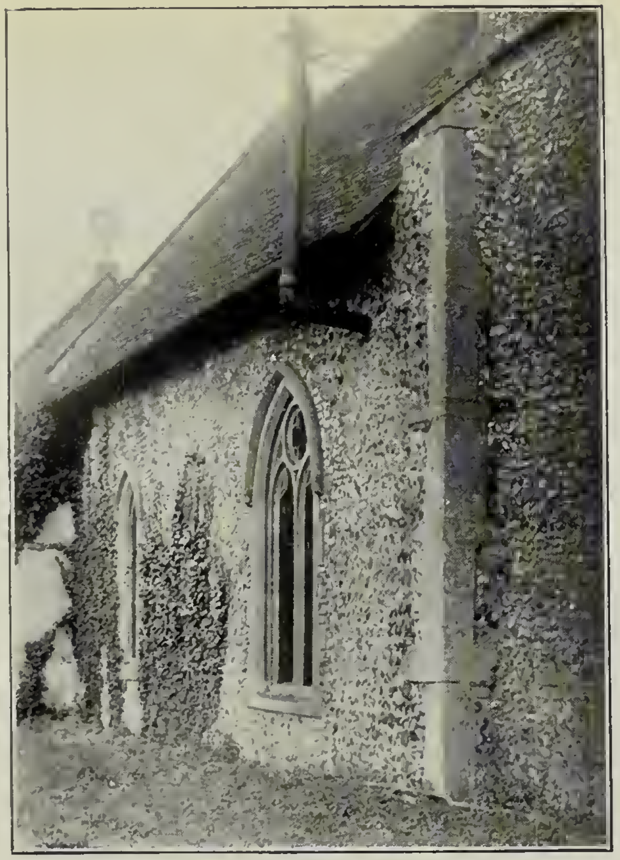

Fig. 3. STRETHALL, ESSEX—N.W. angle of nave, showing "long and short" quoining.

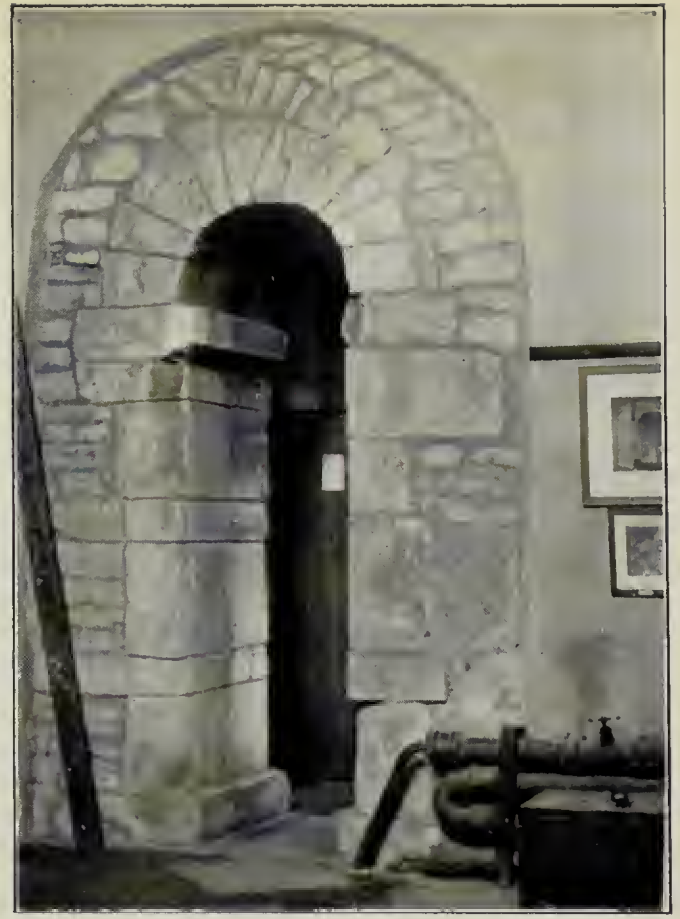

Fig. 4. STOW, LINCS—W. door of N. transept, showing "long and short" jambs and badly cut voussoirs of "through" stones.

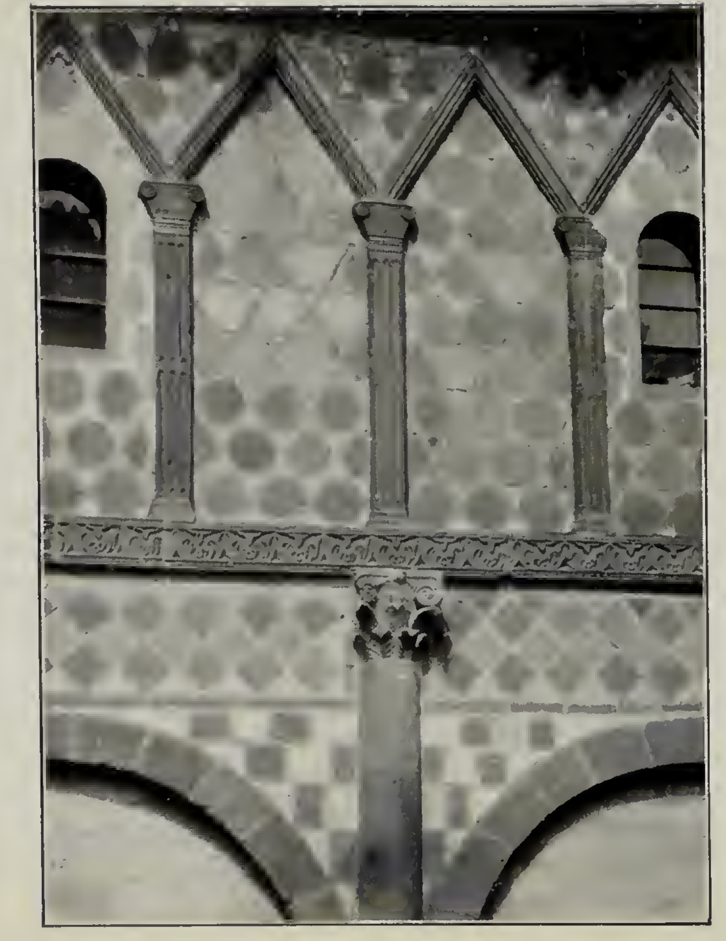

Fig. 5. LORSCH, GERMANY—Pilaster work on exterior wall of the Abbey gateway (9th century).

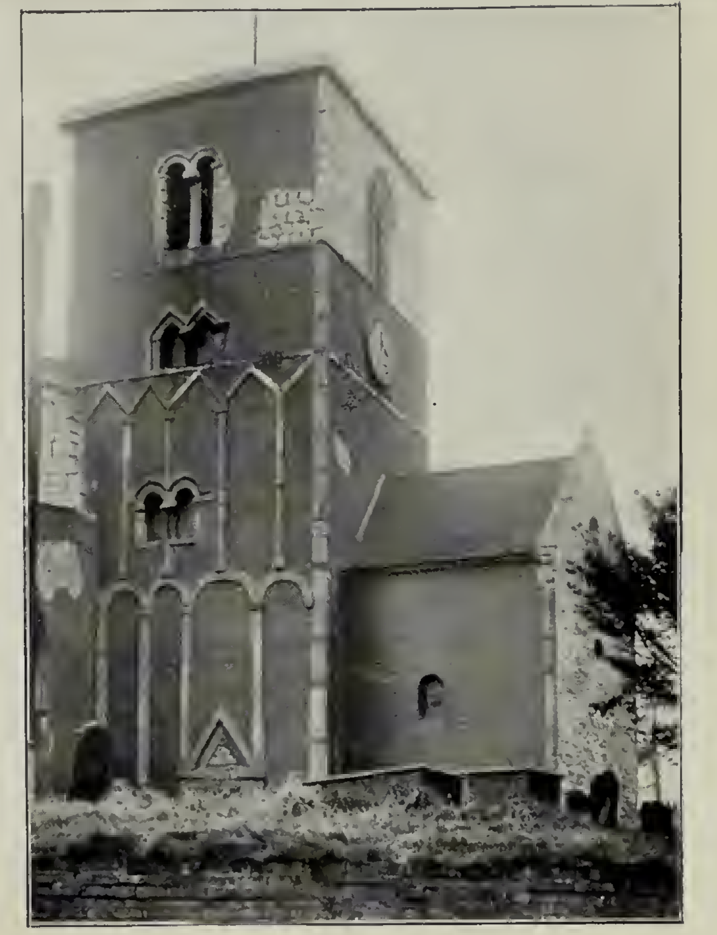

Fig. 6. BARTON-ON-HUMBER, LINCS—Tower, from N.W., showing Saxon pilaster work and balustered openings, the lower two early, the upper one late in the third period.

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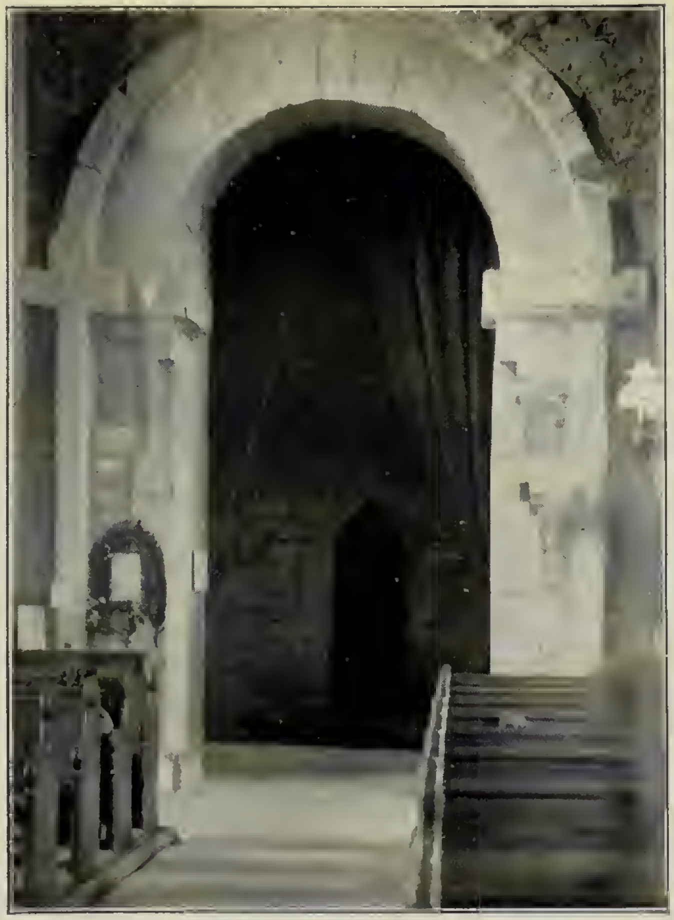

Fig. 7. BRIGSTOCK, NORTHANTS—Tower arch, showing pilaster work surrounding the opening.

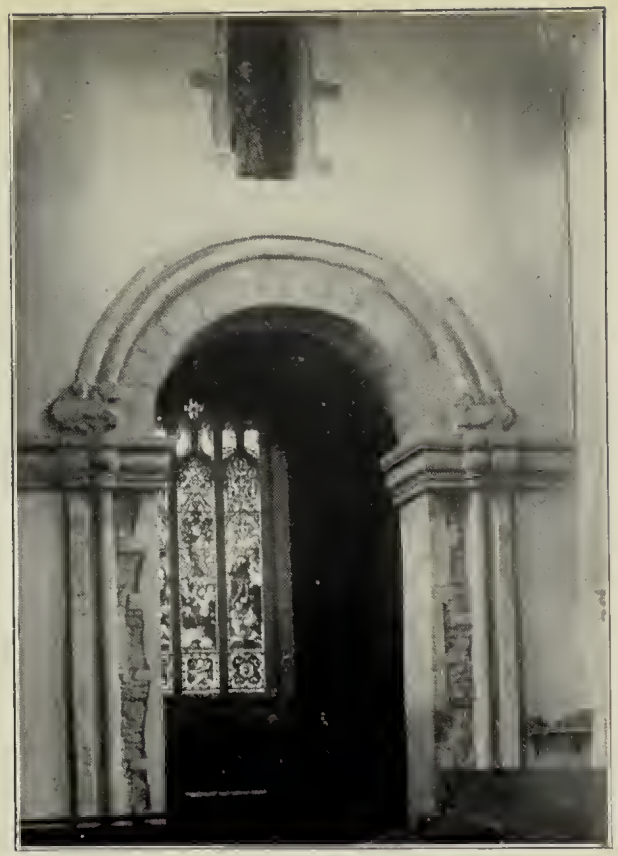

Fig. 8. CAMBRIDGE, ST BENET'S—Tower arch, showing pilasters of half-round and of rectangular section; those round the arch itself spring from carved lions,

badly mutilated that only the outlines of the figures are now visible. Probably the best known Saxon carvings still in their original positions are the two animals (presumably lions) above the imposts in the tower arch of St Benet's, Cambridge (Fig. 8); it is true that their human-like faces show that the artist had little acquaintance with the King of Beasts, but they are nevertheless vigorous examples of animal sculpture. There are also some spirited carvings of birds forming part of the ornament on three of the walls of the tower at Barnack, and other Saxon carvings are to be found in a few churches in various parts of the country.

We have briefly discussed the chief topics connected with the subject of Saxon Architecture, and it would now be as well to recapitulate them so as to obtain a glance at the buildings considered together as one group. In the first period we saw that the churches were at first constructed under strong Roman influence and largely of Roman materials re-used. In the second period what foreign influence there was came from the Vikings, but this affected little except the ornamentation of the buildings. From neither of these periods have we sufficient remains to shed such light on the methods and skill of the Saxon builders as we get in the third period. In this last we see the full development of the cruciform planning which served as a basis for later more ambitious building. The walls of the churches are thin and high, and long and short quoining and pilaster ornament are conspicuous throughout the period, forming, as it were, the hall mark of the style. Simple moulding forms are developed on the larger arches while the smaller openings fall into two characteristic types, the double splayed opening and that with two lights divided by a baluster shaft.

Considering these various features and the sculpture met with on Saxon buildings, one realises that their interest and appeal is not on account of any aesthetic beauty of design or execution. The Anglo-Saxon is a division of the Romanesque style of architecture. Simple at first, it develops later, on quite distinctive lines and has a certain rugged strength and independent character which give it an unfailing charm. But even beyond that, it should make a special historical appeal to us, as being the church architecture of the very founders of the English race. For this reason alone it should command more attention than is even now given to it, and I believe that such added attention would reward with the discovery of a fresh field of great archæological interest.

Archaeological Inspections, 1930.

By G. J. B. Fox.

BARKING, ESSEX (Visited 12th April).

THE Parish Church, dedicated to St Margaret of Antioch, owes its origin to the neighbouring Nunnery; it does not appear in Domesday Book, but it is mentioned in the Norwich Valuation of 1254 ("moniales de Berkyng sunt patrone"). Mr F. Chancellor was of opinion that the east wall of the chancel was Norman, but the earliest windows are Early English. There have been numerous alterations and additions, especially in 1770-71; the plan to-day shows a chancel and south sacristy, nave, north and south aisles with chapels, an outer north aisle with chapel, west tower, and north porch. As the east bays of the nave arcades are wider than the others, and as there is a "set back of the springing in the south wall of the west arch of the south chapel," it would appear that transepts were included in the original plan, but destroyed in the XVc., when the two east arches of the arcades were altered. A striking feature in the church is the number of columns.

The Chancel inclines to the south, and appears to have been built in early XIIIc. The restored east window is XVIe., of three lights under a four-centred head; there are two XIIIc. lancets in the north wall and two in the south; one has contemporary painted "masonry joints." On the north is a XVc. arcade with modern capitals; on the south is a similar arcade set on lower bases, and in the south wall is a XVc. doorway. The chancel arch is of two hollow chamfered orders, which die on to plain responds; it was altered in XVc. In the north wall is a piscina (not *in situ*) with two recesses and shelf, XVIc.; in the south wall is a Norman pillar piscina, found when plaster was stripped from the wall in 1929, and replaced with the drain exposed; also a brick recess, probably sepulchral, of Tudor date; there is an aumbry at the north end of the east wall. The plaster ceiling is XVIIIc., the reredos 1770/71.

The South Chapel is XVc. The east wall has a blocked window; the south wall has two windows, one XVIIIc. and one modern; between them is a blocked priests' doorway, XVc., of which a jamb and part of the head are visible externally. In the west wall is a XVc. two-centred arch of two chamfered orders without capitals. There is a plaster ceiling.

The Sacristy, east of the south chapel, is late XVc., and was entered from the chancel. The walls have an embattled parapet; the east and south walls have each a square-headed window of two lights with wood-frame inserted in 1698. The walls are panelled. An inscription with the Bertie arms gives date of alterations.

The South Aisle is narrow; the south wall has four modern windows with re-used stones; the west wall has a three-light window with renewed exterior and XVc. inner splays and rear arch. The ceiling is plastered, but the plaster has been removed at the west end over the baptistry, exposing the original woodwork. The stem of the font, engraved with scrolls (early XVIIc.), is united to its octagonal bowl, till recently in the church at Creeksmouth, and oak cover; it is now placed at the west end. At the east end are the lower doorway and steps leading to the rood loft. The exterior wall is disfigured by unsightly brick buttresses.

NAVE. The north arcade of the nave has four bays; its easternmost arch, which appears to be XVc., is four-centred, of two hollow chamfered orders; the octagonal columns appear XIIIc., and have modern capitals (except one); these columns are probably remnants of the original XIIIc. church, as may be also the bases of the two east columns of the south arcade; the west respond is modern but has part of a XVc. moulded capital; the westernmost arch is higher than the others; bases, except one, are modern. The south arcade is later than the north, but two bases appear earlier; the capitals are cement, except that of the third column. The clerestory is late XVIIIc. The four windows each side are groined into the plaster ceiling, which was put up in 1770/71, and conceals the tie-beams of the original oak roof; the piers had been hidden in plaster, which has been removed. The Royal Arms are at the west end on a railing in front of the west window.

THE INNER NORTH AISLE is also narrow, and has a XVIc. north arcade of five bays; the arches are four-centred, with outer continuous mouldings and inner mouldings resting on attached shafts. The piers are of varying width, and have moulded capitals and bases. At the east end of the north wall is a three-light window under a square head, not grooved for glass, with sloping base; it was perhaps built in from another wall, and is said to be a squint. At the west end is a XVc. doorway to a turret staircase, with moulded jambs and four-centred arch. The wooden roof is hidden by a plaster ceiling.

THE INNER NORTH CHAPEL, XVc., at east end of inner north aisle, is now the organ chamber. In east wall is a modern window. The north wall has a XVIc. arcade of two bays with cemented arches; the circular pier and responds are XIIc. work, probably spoil from the Nunnery, and have scalloped capitals restored with cement; the west arch is XVc., two-centred, of two orders without capitals. The south side slopes to the south. The ceiling is plaster. There is a mutilated XVIc. piscina. The organ was purchased in 1770.

THE OUTER NORTH AISLE is XVIc., and continuous with the inner north aisle. The north wall has four XVIc. windows, three with two lights and tracery, and one with three lights, all restored; and a doorway with moulded jambs and two-centred arch under a square head, with quatrefoil spandrels and discs, probably re-used from elsewhere. East of the porch is a patch of ashlar, re-used and enclosing a reset two-light window, XVIc. The west wall has a XVIc. three-light window with restored exterior. The north porch is XVIc.; the outer doorway is two-centred, the responds have attached shaft with moulded capital, perhaps XIIIc. re-used; east and west arches are blocked. The oak roof is XVIc., with tie-beams, king-posts, struts and wall plates.

partly restored in 1929 when plaster ceiling was removed. This aisle is said to have been built in three successive portions, viz., the two east bays, then the next two bays, and finally the westernmost bay; the north porch was then rebuilt further west on its present site. During Mr C. C. Winmill's restoration of 1929, the vaulted crypt of a charnel chapel was discovered; the springing of two arches remains. The chapel apparently stood apart from the north aisle, on space now covered by the present outer north aisle.

The Outer North Chapel (St Mary's Chapel) has XVIc. walls of XIIc. stones from the Nunnery. The north wall has XVIIIc. wooden doorway, and a small blocked two-light window inserted as building material above. East of the doorway is a restored window of Perpendicular style with super-tracery; also part of a doorway with pointed head. The east window was inserted in 1913, when re-used Norman moulded stones were found in the wall.

The West Tower is XVc., of three stages with string courses and embattled parapet, and a stair turret at the north-west angle; only the west face is external. The east arch is two-centred and of two orders, with attached shafts and moulded capitals and bases; the north and south arches are lower; the three arches were blocked in 1770/71 to prevent draughts, and to form a mortuary chamber. The west doorway and four-light window are restored externally, and have old work in splays and rear arches. A former gallery was entered from the stair turret. In the east wall of the second stage are traces of a doorway; the windows are restored externally. The north and south aisles were lengthened to enclose the tower. In the north-west pier is a niche, XVc., probably a holy water stoup (the basin has been destroyed by a later slab), with moulded head, embattled cornice, vaulted soffit and traceried panels, one having a small niche. Near it is part of the shaft of a Saxon cross, with interlacing; also an oblong stone basin from a kitchen, and other stone fragments.

Brasses. In the chancel: priest with chalice, c. 1480, inscription lost; Thomas Broke (1493) and wife Alice, with inscription, figures of man and woman, one son and one daughter, on slab showing earlier indents; John Tedcastell and wife Elizabeth Mey (1596), with figures of man and woman, four sons, five swaddled infants, scrolls, arms, and indent of seven daughters; slabs with indents remain here and in other parts of the church. In the nave: Christopher Merell (1593) and his sister Anne Yardlye (1579), inscription and arms. In the inner north aisle: Richard Malet (1485), chaplain of the Sampkyns Chantry, found on site of Nunnery in 1910, and relaid in the floor; the surname is engraved on the effigy. In the inner north chapel: fragment of scroll, indents of figures of two men and two women, Trinity, and inscription; c. 1480.

Various Monuments. In the chancel is a monument to Sir Charles Montagu (1625), who is shown seated in a tent; a similar monument to Martin Bond (1643) is in St Helen's, Bishopsgate. On the north wall of the chancel is a slab with incised demi-figure of Martin, first vicar of Barking (d. 1328), in vestments, with inscription, "Martinus vicarius;" it was found on the site of the Nunnery in 1912. In the outer north aisle is a monument, with white marble sarcophagus and black slab, to William Pownsett (1553), who was steward to the last Abbess; the monument has been repaired at the cost of All Souls College, Oxford, which holds the advowson. On the north wall of the outer north chapel is reset part of a slab with incomplete marginal inscription to Maurice, Bishop of London in 1086, and Alfgive, Abbess of Barking in 1066.

The Firebell Gate, or cemetery gate, now the entrance to the churchyard, was one of the Nunnery gates (another was destroyed in 1885). The upper floor was the chapel of the Holy Rood, and retains a stone Rood of XIc. or XIIc. date, damaged, with figures of the Virgin and St John; the Cross is raguly; the background is diapered and had traces of blue paint. The Gate was probably put up before 1400, reconstructed c. 1460, and served as a belfry before erection of the west tower.

The Nunnery was also visited, but little beyond foundations remains. The site was excavated in 1911; part was laid out as a recreation ground, and part reserved to display the plan of the church, etc. The Nunnery was founded by Erkenwald (afterwards Bishop of London), c. 670, and he appointed his sister Ethelburga the first Abbess. The buildings were destroyed by the Danes in 870, and rebuilt about 100 years later by Edgar the Peaceable. Here William the Conqueror lived during the erection of the White Tower of London. Further rebuilding took place in XIIc., but very few details are known. Foundations of the nave and west towers are marked out; parts of the south transept and its apsidal chapel, and of the warming house with two fire-places, etc., also remain.

Roman tiles and a coin found on the site of the Nunnery, and pottery in the pre-Roman enclosure at Uphall, indicate Roman dwellings at or near this place.

STOKE D'ABERNON (Visited 12th July).

The village is mentioned in Domesday Book as "Stoche;" in the XIIc. it appears as "Estokes," and in XIIIc. as "Stokes d'Abernon;" "stoke" is a stockaded enclosure. This is the only Surrey place-name coupled with a family name. In 1086 William I. granted the manor, previously held by Bricsi of Edward the Confessor, to Richard de Tonbridge, Earl of Surrey; afterwards, Roger "Dawburnon the Norman," who probably came from Abernon, near Lisieux, in Normandy, became tenant. In 1189 Ingelram d'Abernon lent the manor house to William Marshall and his wife, the daughter of the Earl of Pembroke, for their honeymoon ("chies Sire Angeran d'Abernon à Estokes"). Several subsequent holders of the manor are indicated by the arms on the Norbury Chapel screen.

The Church (now dedicated to the Virgin) is mentioned in Domesday Book. Its plan shows a chancel (inclining considerably to the north), a chantry chapel (also inclining north), a nave with a north aisle, and modern north-west tower, south porch, and organ chamber. The chancel and two bays of the nave represent a Xc. Saxon church in which Roman material was used. In 1866 drastic rebuilding and addition destroyed much ancient work.

The Chancel probably was lighted by small wide-splayed loops; in early XIIIc. a four-part vault of two bays replaced the earlier roof, and the windows were altered. The vaulting shafts are single at the angles, and triple on the north and south walls, with circular moulded capitals and circular bases with the "water" moulding; the north-east and south-east bases are well above floor level. The transverse rib has dog-tooth; the boss in the west bay is a rosette, perhaps in allusion to the Virgin. The east window is a modern triplet replacing a XVIIc. three-light window. In the south wall are two early XIIIc. wide-splayed pointed lancets with rear arches. On the north side is an arcade of two arches; the east arch has fluted shafts, moulded capitals and bases, foliaged spandrels, and an embattled cornice; the west arch has continuous mouldings, and is without a label. The reredos showing the Stations of the Cross, and the wall arcade, are modern. The altar table is XVIIc., with a movable top. A small consecration cross is incised on the vaulting shaft on the south wall.

In 1909, Mr P. M. Johnston, in repairing the Norbury Chapel, noticed that the west part of the north wall of the chancel was slightly curved and built of flints and Roman tiles set in a hard mortar; similar details were also noted on the south side, where some of these tiles, set herring-bone fashion in the original mortar, can be seen on the outside. In Mr Johnston's opinion, an ovoid apse, if not actually Roman work, preceded the Saxon square-ended chancel. Above the vaulting were found traces of XIc. paintings, and an inscription which existed before the vault was added. (See "Memorials of Old Surrey" and *Surrey Arch. Coll.*, xxvi.) A drawing by Twopenny in 1828 shows a chancel arch, round-headed, with through stones and moulded imposts; that appears to have been replaced by one of two orders with a pointed head, perhaps contemporary with the nave arcade; it, in its turn, was displaced by the present arch in 1866.

On the south part of the east wall is a portion of a XIIIc. painting showing the "Adoration of the Lamb;" it is in four sections; in the upper two are angels; below them are figures of the "Saved;" while at the bottom a crowned figure, playing a harp, represents the four-and-twenty "Elders;" the north half is modern. An ornament of the "double comma" pattern also occurs, and on the splay of a south lancet are the masonry pattern and roses. Against the south wall is the broken bowl of a Norman piscina found in a pocket of the vaulting in 1909.

Brasses. The great feature of the chancel is the group of brasses and slabs, including the oldest brass now remaining in England. They are fully described in *Surrey Arch. Coll.*, xx and xxxii; the latter volume has a list of authorities.

Effigy of Sir John D'Abernon (1277) on a slab, in chain armour, with enamelled shield of arms (azure a chevron or); a smaller shield, also enamelled, remains; another shield and the separate letters of the marginal inscription have disappeared; the strap holding the shield has the "swastika;" below the right arm is a spear with pennon charged with a chevron.

Effigy of Sir John D'Abernon (1327) under a mutilated canopy, on a slab; an example showing the cyclas and mail and plate armour; the shield is not enamelled; part of the marginal inscription on a fillet remains.

On another slab are the indents of four shields (one shield, the only one remaining, was stolen recently), and of the letters of a marginal inscription, perhaps in memory of Sir John, son of Sir John II.

On the floor is a ledger to Sir John Ackland (1647).

On the south wall is a brass to a former Rector, John Proud:—

> Hic iacet dns Johes Prowd Rector isti' eccle et frat'
> Rector ecclie de esthorsley, qui obiit nono die Octobr'
> A° dni MCCCCLXXXVII. Cuius aie ppciet' d' ame.

Affixed to the east reveal of the east arch of the arcade is a figure of Anne (Croyser), wife of Sir Henry Norbury (1464), with four sons and four daughters standing on her skirt; Latin inscription plate.

On the west reveal of this arch is the effigy of a chrysom child, Elyn, daughter of Sir Edmond and Jane Bray (1516), English inscription; the forehead is marked with a cross.

THE SAXON NAVE was originally aisleless. High up in the south wall is an original rectangular doorway of through stones and fine joints; its outer head is a flat stone, and its inner head is an oak block (renewed); this served as an entry to a room over a vanished porch, or from the exterior to a room over the west end of the Saxon nave. In the same wall is a blocked XIIIc. doorway with continuous mouldings, and an external holy water stoup of later date; a doorway now admitting to a vestry was previously a private doorway for the inmates of the manor house. There are also a modern doorway, with porch, and a modern lancet. The north aisle and arcade were added c.1190, and the roof made continuous with that of the nave; Cracklow's view of 1823 shows a lancet at the west end of the north wall, a north doorway, a two-light window under a square head, and another doorway just west of the Norbury Chapel; in the west wall of the nave was a XVIc. three-light window, but no west doorway. The aisle was re-built in 1866, destroying the old doorways and windows, and extended west to include a tower; a new north doorway is now the main entrance. The north arcade was originally of two bays of one chamfered order, with a label, a circular column, a circular moulded base with spurs on a square sub-base on a plinth, and a circular capital with square upper member and abacus;

on the column is a painted crucifix, perhaps contemporary. A west bay was added in 1866. Perhaps in the wall above is a hidden Saxon window. Over the chancel is a doorway to the space between the vaulting and the roof; over north jamb of the arch is the plain XVc. upper doorway to a former rood loft.

The restoration of 1866 under the influence of the Rector, the Rev. Canon Phillips, destroyed an altar recess and a squint on the north side of the chancel arch, also similar features on the south side. In the north recess was a painting of Archbishop Thomas Becket with traces of lettering and a figure of a kneeling knight; a copy of the painting is preserved in the Museum of the Surrey Archæological Society at Guildford, and it is reproduced in *Archaeologia*, lxxix, fig. 10, and pp. 35-36. The XVc. piscina of the south altar remains in the south wall; it has moulded jambs and curved rear; a perforated boss covers the drain. The Royal Arms had been painted over the chancel arch. Enclosed behind a grating at the west end of the nave is the top of a bronze censer, perhaps XIc., exhumed in the churchyard in 1907; the base is drilled with holes, and its upper part is a model of a church. The lectern is early XVIIIc., of foreign make, in form of an eagle on a twisted stem. The roof and seats are modern. The pulpit, made abroad, is seven-sided; its stem rests on a platform with grotesque figures and pendants; its body of walnut has angle pilasters with Ionic capitals, framed panels, guilloche and dentils, moulded cornice; the wall standard is of oak and bears the Vincent arms and motto "Non nisi Vincenti;" the sounding board (till 1907 lying neglected in the baptistry) has grotesque figure of an angel. On the wall is a wrought iron scrolled hourglass stand; the glass, said to have been recently returned to the church, is preserved in the vestry. A painting showing the east end of the nave before 1866 is in existence.

In 1866, a bellcote supported on beams rising from the floor at the west end of the nave was destroyed; a drawing of 1828 by Twopenny shows it; another drawing of his shows the exterior of the west end with long and short work at the quoins, and XVc. two-light window to the north aisle; no doorway appears; another drawing by him shows long and short work in the south-east quoin.

The Norbury Chapel, dedicated to St John the Baptist and St James, was added c. 1490, at the east end of the north aisle, by Sir John Norbury. The rood-loft stairs at the south-west angle were built at the same time. The east window is of three lights with moulded jambs, etc.; the two windows in the north wall are each of two lights with plainer mouldings; some older worked stones have been re-used in the windows. The north wall has a contemporary fireplace with moulded head on which are scratched "Edmund de Bray Knyght" and three other names; the chimney is shown by Cracklow. In the west wall is a rebuilt doorway to an organ chamber, and over it is an original quatrefoil opening. On the east wall is a tablet to Sir John Norbury (1521), and a brass plate to memory of the first chantry priest, with an inscription of eight lines:—

Thys chauntre fwndyt sir John Norbery
The fyrst prest was syr John pynnoke . . .

Below the east window is the effigy of Sarah (Paulet) (d. 1608), wife of Sir Francis Vincent; beneath a semicircular arch with a panelled soffit are an inscription and three shields of arms of Vincent and Paulet; the plinth shows five sons and two daughters. On the north wall is a monument, under a circular canopy, to Sir Thomas Vincent (1613) and his wife, Lady Jane (Lyfield) (1619), with arms of Vincent and Lyfield. On the south wall is a brass plate enclosed in a marble frame, showing the interior of a church, with kneeling figures of Thomas Lyfield (1595), his wife Frances (Bray) (1592), and his daughter Jane; it has a genealogical inscription of thirty-one lines. In the east window is a glass panel to Io: Reeve Rector (1596), with a text in Greek.

The east arch of the arcade formed a canopy to the monument of Sir John Norbury, which has been destroyed; it may have served as an Easter sepulchre; the small alabaster figure on the east wall may have formed part of this monument.

The modern screen at the west end of the chapel contains coats of arms and quarries removed from the east window of the chancel in 1866, and others, including the Bray badge, the "hemp-brake:"

D'Abernon—azure a chevron or;
Crosier—sable a cross or between four bees of the same, impaling D'Abernon;
Norbury—sable a chevron between three bulls' heads argent, impaling Crosier;
Haleighwell—or a bend sinister gules charged with three rams argent, impaling Norbury;
Bray—argent a chevron sable between three eagles' legs erased, of the same, impaling Haleighwell;
Lyfield—or a chevron gules charged with three trefoils between three demi-lions gules, impaling Bray;
Vincent—azure three quatrefoils argent, impaling Lyfield;
Paulet—sable three swords argent in pile, points towards base, pommel and hilt or.

An oak chest of XIIIc. date has a slit and tray, also a secret cavity for coins; it is on standards; on the front are three geometrical roundels of different patterns, three lock plates with hasps; the hinges are "pin" pattern, which is more secure than the usual hinge.

The modern tower is at the west end of the north aisle; there are three bells:—(1) by William Eldridge, 1687; (2) by Warner & Sons, 1866; (3) by J(oan) S(turdy), cast c. 1450.

Beneath the tower is the font, XVc. plain and octagonal, probably the gift of Sir John Norbury (c. 1490) to replace an older one. In the window of the baptistry are scraps of glass reset from other windows; an angel with a fiddle, and St Anne teaching the Virgin, are among the designs.

The plate includes two patens, a flagon, and an alms dish, all plated. Over the blocked doorway in the south wall of the nave is a small projecting sundial marked with divisions, of Saxon date.

In the churchyard, against the north wall of the Norbury Chapel, are two early grave slabs, which ought to be replaced in the church to preserve them from decay. One, an oblong slab, was ejected from the chancel in 1866; it has indents of letters of a marginal inscription to Johanna wife of Sir John D'Abernon (III). The other (mid-XIIIc.) has a cross-crosslet on a long stem, with marginal inscription in Norman-French, to " Sire Richard le Petit iadis Persone de cest eiglise . . ."

Some London Trade Signs.

By W. C. Cocksedge.

UNTIL a few generations ago, every shop in London had its distinctive sign, but they have either disappeared or have been relegated to the Guildhall Museum. These signs, however, like our modern public-house signs, pertained to the building and might or might not have any connection with the trade carried on therein.

In these few notes, I wish to recall attention to some trade insignia which were almost universal, some thirty years ago, but are now only to be met with in the meaner and shabbier streets of the Metropolis.

Foremost among these survivals are the three brass balls of the pawnbroker, almost, perhaps, unnoticed by the ordinary citizen but woefully familiar to his more unfortunate or less thrifty neighbour. They, originally, pertained to the Arms of the Dukes of the Medici and their present degradation is surely an anticlimax. The conventional arrangement of the three balls was interpreted by the facetious as an intimation that it was two to one against a pledge ever being redeemed.

Uncle's three brass balls are still firmly established in our midst, but the barber's pole is steadily disappearing. Originally, the pole had a bleeding-dish suspended at its end, thus commemorating the close connection between the barber and the surgeon. In Germany, the striped pole with its brass dish is common at the present day. The stripes should properly be red and white only, and are said to represent the blood and the bandages significant of the repulsive operation. Our ancestors had strong stomachs.

In the same shabby streets which harbour the pawnbroker's sign and the barber's pole, may still occasionally be seen, the gilt wooden ham which marks the cooked-meat shop. The singularly innutritious character of this counterfeit has given rise to a well-known Parliamentary expression. Less noticed, but still not uncommon, are the Ali Baba jars in relief which grace the ends of the facia of the old-fashioned oil shop.

The tobacconist had at least two common signs, the Highlander and a curious wooden cylinder with concentric hemispherical mouldings apparently representing a roll of tobacco. The former is still occasionally retained, gay with paint and gilding, outside a more select establishment, but the latter is but rarely to be seen, hanging forlorn and unnoticed over the humblest shops in decayed suburbs.

The chemists' shops of our childhood were rendered glorious in our juvenile eyes by their gigantic flasks of coloured liquids, orange, green and blue, which our unsophisticated minds accepted as actual medicines in bulk. Mature knowledge suggests that they owed their colours to mineral solutions and even risks a guess at the minerals employed. Between the flasks but on a lower plane, were frequently, one or more enormous opaque ointment jars with cabalistic inscriptions. Strange to say, these cherished decorations have fared better than the majority of trade signs and now chiefly grace the discreet pharmacies of Kensington and similar neighbourhoods and have been eschewed by the drug-stores which deal in electric torches and gramophone records.

The zoological china which was emblematic of the dairy has on the contrary been relegated to the windows of the struggling Welsh milk-sellers of obscure suburbs. Pundits have written learnedly upon the origin of the storks and herons which were so familiar a generation ago. To me, the connection is plain. The storks bring the babies—babies drink milk and no more need be said.

Of the minor trade and professional signs, mention might be made of the red lamps of the doctor and dentist, also declining in status, and the sweep's broom. The latter matter-of-fact decoration may still be seen over the porch of many a humble abode, and prompts me to ask why the sweep's dwelling is often the neatest and nattiest little cottage in an otherwise grubby neighbourhood.

Brambles of Kent and Surrey (4).

By William Watson.

Rubus mucronatus Bloxam. I am very doubtful whether this can be claimed as a Kent or Surrey bramble; I have not seen it growing in either county, nor seen a specimen from either county. There is a record of it in Hanbury and Marshall's *Flora of Kent* (1899) for Eltham, but I suppose the bramble found was not *R. mucronatus*, as it is described as a very glandular, hairy form, by no means typical. For Surrey it is recorded for Tooting Common, " a form " (Rogers, *Journ. Bot.*, 1903); so in this instance, too, the record is not sound. I have searched both localities for *R. mucronatus*, but without success.

R. Banningii Focke. A brief notice of this appeared in Rogers's *Key*, as a variety of *R. mucronatus*, but soon afterwards in *Journ. Bot.*, 1895, he explained that he had withdrawn the name as the identification was not certain. The bramble in question grew in S. Devon.

In a lane to the east of Eltham Park, v.-c. 16, there are several bushes of a bramble which I make out to be this from Focke's and Braeucker's descriptions. It is primarily a bramble of N.W. Germany, occurring up to the Belgian frontier (Eupen); and is not unlikely therefore to be found in S.E. England.

The stem is blunt-angled, green and reddish, glaucous, fairly hairy (partly with small clustered hairs), with scattered acicles and pricklets and hardly any stalked glands. Prickles long, lanceolate, declining, subequal, and nearly confined to the angles. The leaves are large, pale green, 5-nate pedate, rather finely serrate; the teeth shallow, furnished with rather long curved mucros, those terminating the principal teeth mostly recurved and succeeded above by a shallow sinus. The basal leaflets have stalks about 5 mm. long. Petiole without any trace of a channel; stipules linear, fringed with conspicuous stalked glands and acicles. The leaflets are glabrescent above, at first white beneath, then greyish or matt green, and densely, softly and finely pubescent. Petiole and petiolules armed with long, declining and falcate prickles. Terminal leaflet narrowly elliptical, somewhat diminished to the emarginate base, shortly acuminate-cuspidate.

Panicle often very well developed, with strong racemose or compound branches below, issuing (often in pairs) from the axils of 5-nate leaves; narrowed upwards, the upper branches spreading at a low angle and often subtended by a small and narrow leaf; 1-3-flowered, the pedicels long and slender. Where a fourth flower is present it arises from the base of the branch. Rachis densely clothed with rather short patent hairs, in which are buried a fair number of dark red stalked glands. Prickles many, lanceolate, unequal but mostly long, nearly patent or more declining, a few falcate; few, or weak, or absent from the upper branches. Bracts and bracteoles large. Flower buds greenish grey, base flattened, felted and slightly glandular. Calyx segments ovate acuminate, after flowering reflexed, in part loosely. Petals large, pink, oval, tapered below. Stamens white, reddening, a good deal longer than the reddish styles. Anthers glabrous. Young carpels nearly glabrous. Receptacle pilose. Fruit large, ovoid, composed of many, equal carpels.

This is a bramble of vigorous growth, producing large and showy, pyramidal panicles, often containing 70-80 flowers, which rather recall the flowers of *R. villicaulis.* Focke in his last work on the brambles removed this from the *Adenophori* to a place among the *Hedycarpi.* This affiliation I think the racemose structure of the panicle, and its glandular equipment, forbid; and I would place it in the group of *R. foliosus*, despite the scarcity of stalked glands on the stem. The form, toothing and texture of the leaves are right for that group.

R. longithyrsiger Lees grows in the neighbourhood and bears some resemblance to the present bramble, but may be known at once by its smaller, white flowers, its nearly erect lower panicle branches almost parallel to the rachis, and its somewhat straight-sided leaves.

Sudre omits *R. Banningii* from his Monograph, not having seen a specimen and judging from Focke's description that it is not different from *R. alterniflorus* M. & L. The latter, however, is really quite another bramble. It has darker leaves, more discolorous beneath, more coarsely toothed, more wrinkled and coriaceous. The panicle branches are cymose and the pedicels quite prickly. The carpels are conspicuously pilose, and the calyx segments partly erect on the fruit. The whole bramble is also less hairy, both on stem and panicle. It is not even an ally of *R. Banningii*, in my opinion, being best put close to the *Discolores.*

R. apiculatus Weihe (*R. anglosaxonicus* Gelert). There are records of the occurrence of the type at Shooters Hill (v.-c. 16) and at Wimbledon (v.-c. 17). I cannot confirm either record, nor have I met with it anywhere in Kent or Surrey.

I have seen a bramble in Ryarsh Wood (v.-c. 16) which is perhaps the one referred to in the *Flora of Kent* as *R. anglosaxonicus* Gelert "a form towards var. *raduloides*," said to grow by Ryarsh Wood in abundance (Rogers). The same bramble seems to be intended by the record in *Journ. Bot.*, 1902, "*R. anglosaxonicus* Gelert sub-sp. *vestitiformis* Rogers (v.-c. 16), Ryarsh Wood, 1896 (forma)." In the *Handbook* Rogers says that he has seen a form in West Kent which goes some way towards connecting sub-sp. *vestitiformis* with the type. This seems to be another reference to the Ryarsh Wood bramble. The bramble certainly recalls *R. apiculatus* in a general way—the sub-sp. *curvidens* more than any other form, as the leaves are green beneath and have the principal teeth large and recurved. But it cannot, to my mind, be identified with any form of *R. apiculatus*, nor be left under that name in an aggregate sense. The type of minor armature is almost that of *R. fuscus*, short stalked glands and acicles predominating on the stem. The panicle is long and rather narrowly pyramidal, and is furnished with several simple leaves, followed by long linear bracts. The stem is rather thickly clothed with paired and tufted hairs. The clothing of the panicle is dense but rather short, and the flower buds are greyish white felted rather than hairy. The terminal leaflets are broader than in *R. curvidens* and distinctly obovate. I am inclined to identify it as *R. retrodentatus* M. & L., which grows in N.W. France, including Normandy, and might, therefore, be expected to grow in S.E. England.

R. apiculatus sub-sp. *raduloides* (Rogers). Dartford Heath (v.-c. 16); Tooting Common, Barnes Common, Sheen Common (v.-c. 17). The glabrous stem is armed with numerous weak, more or less patent prickles, and bears many unequal stalked glands (some very short) and unequal glandular prickle-bristles. The broad leaflets are plicate, shortly hairy on the veins beneath, greyish felted between the veins, and coarsely doubly dentate, the teeth triangular ovate. The flowering branch is dark red, furrowed, thinly, shortly hairy, and is armed with weak, patent, falcate, hardly declining prickles. The panicle is long and strong, broad and lax; the lower branches remote, axillary; and there are several simple, discolorous leaves above. The terminal leaflets are large, very broad, obovate-rhomboid, somewhat doubly coarsely dentate. Stipules broad. Flower buds large, yellowish, greyish green, villose, shortly glandular. Flowers of moderate size, petals remote, obovate-cuneate, notched at apex, pinkish with a yellowish claw. Stamens white, slightly longer than the reddish yellow styles. Calyx segments loosely reflexed in flower, rising afterwards and becoming red at the base inside. The semiglobose fruit is imperfectly produced. The panicle branches are furnished with many slender patent acicles.

The bramble is very robust, but the flowers are small and unattractive, and the fruits almost worthless. Rogers describes the flowers as bright pink, but this does not hold good for the Kent and Surrey plant. It retains its leaves through the winter.

"*R. melanoxylon* M. & W." In *Journ. Bot.*, 1902, Rogers records that he has seen specimens of this collected by Wolley-Dod at Crown Wood, Shooters Hill, v.-c. 16. In the *Victoria County History of Kent* Marshall records the same bramble for Bexley Wood (Wolley-Dod, 1901). I have seen a specimen of the bramble gathered by Wolley-Dod at Bexley Wood, and on several occasions in the past ten years I have studied the bramble in that station. I have collected it also in Lessness Wood, close to Shooters Hill. I think there is no doubt that a mistake has been made in the name, which is due to Focke, I believe. The bramble is quite unlike *R. furvicolor* Focke (which is the main constituent of the *R. melanoxylon* of Rogers' *Handbook*), but superficially resembles the true *R. melanoxylon* M. & W., which I have seen. The Kentish plant is clearly a form of the *R. rivularis* group; and I identify it with confidence as *R. setiger* L. & M., a bramble which has not been recorded before for Britain. The slender, almost acicular prickles, and the crowded, very long and slender stalked glands and acicles on the panicle, and the white, narrow petals bespeak a member of the *Bellardiani*. The broad cordate-ovate, shortly pointed terminal leaflets, softly hairy beneath, and the numerous simple ovate leaves crowded with stalked glands on their upper surface, make it easily recognisable. The stamens are white and exceed the green styles. The anthers are glabrous and the young carpels glabrous. The stem and the axis of the inflorescence are tawny, the stem becoming blackish when fully exposed. The bramble was collected originally by Lefèvre on sandy soil in the Wood of Tillet, Canton Crespy-en-Valois (Oise), to the north-east of Paris, and has since been found in the Vosges and in several places eastwards to Silesia, and also in Switzerland.

R. infestus Weihe. This is a much misunderstood bramble in our country. We have the true plant on Farnborough Common, Hayes Common and in Barnet Wood, Hayes (v.-c. 16); and on Netley Heath and in the Roughs near Guildford (v.-c. 17). I have grown a plant from Farnborough Common in my garden for several years. The stem is green at first and turns a brownish red, and so does the flowering branch. The leaf is a remarkable type to find on a very prickly and glandular plant: the leaflets are imbricate, the terminal leaflet broadest near the cordate base and narrowed from the middle upwards and ending in a slightly cuspidate point; the basal leaflets are shortly stalked. The leaf thus recalls the group *Suberecti*, and the terminal leaflet *R. affinis* in particular. The leaves are of a pleasant, rather deep green, and are glabrous above, greyish beneath at first, then green. On the flowering branch the terminal leaflets are mostly obtuse. The flowering branches are short as a rule, and the branches of the panicle few-flowered. The flowers are very characteristic; white, cup-shaped, with the upper parts of the petals inflexed. The petals are roundish but they taper below into a rather long claw. The petals can sometimes be found turning reddish after exposure, as I have seen happen with *R. plicatus* and *R. Rogersii*. The many hooked and geniculate prickles on the panicle rachis are very characteristic. The white stamens are much longer than the green styles. The young carpels are glabrous. Fruit sweet, rather large and freely produced. I should add that the leaflets are rather coarsely, irregularly or rather doubly, broadly toothed., The bright green foliage, the brown stems and the large and showy white flowers make a handsome bramble.

Neuman has a paper on *R. infestus* in *Botaniska Notiser*, 1915, in which he says that the Elmquist and Agardh herbaria contain sheets of "*R. infestus*" from England, but none are true *R. infestus*; and that he himself has received by direct exchange with English botanists *R. anglosaxonicus* and *R. Drejeri* (a welcome acknowledgment that we have *R. Drejeri*!) under the name of *R. infestus*, but never the true *R. infestus*.

I have seen dried specimens from Chobham Ridges, from Weybridge Common, and from Wimbledon Common, collected by Mr C. E. Britton, all of which I do not doubt are correctly identified as *R. infestus*. These are in v.-c. 17.

I think the examples of Marshall's collecting from near the Hammer ponds, Thursley (v.-c. 17), for the *Set of British Rubi*, No. 122, are correctly named *R. infestus*, although Neuman says the bramble strongly reminds him of *R. taeniarum* Lindeb. (Rogers has, according to Neuman, wrongly identified *R. taeniarum* with *R. infestus* in his *Handbook*.)

E. F. Linton's examples labelled by him *Rubus infestus* Weihe, f. *arenosa* and f. (*aprica*) *arenosa*, collected at Munstead, v.-c. 17, on 25/8/1892, are simply *R. Hystrix* Weihe. The examples collected by the same gentleman at Farnborough Common, v.-c. 16, and called by him *R. infestus* Weihe, are the bramble that I call *R. Griffithianus*, and so is the bramble collected by Rogers on Hayes Common on 7/9/1902 as *R. infestus*. See *Journ. Bot.*, 1903, where the plants from these last two stations are recorded as *R. infestus*. C. E. Salmon collected a bramble at Reigate Heath in August 1897 (Ref. no. 2) as *R. infestus* Weihe, and Rogers confirmed that it was *R. infestus*, "a strong form." There is a note of it in the *Wats. B.E.C. Rep.* for 1897-8, p. 8. Salmon records that it had pink petals. I have seen several examples of the bramble, and I am afraid it will not do at all for *R. infestus*. I think it is *R. timendus* var. *rosciflorus* Sudre (*R. subinfestus* Wirtg. exsicc. according to Sudre). This would constitute a first record for that plant in Britain. Near Smithwood Common (v.-c. 17) Salmon found another bramble in 1896 which was believed to be a form of *R. infestus*. I have seen examples of this gathering but I do not recognise the bramble as one known to me; it is not *R. infestus*, but some member of the *R. pallidus* group, near *R. Loehri* Wirtg., I think.

R. uncinatus P. J. M. Tooting Bec Common (v.-c. 17). I know of no other locality for it in Kent or Surrey. The glossy, hooked, yellow prickles (crimson-based when growing in the sun) are very striking. Müller's first description, contained in *Flora* (1858), seems to relate to shade-grown examples. In *Bonplandia*, 1861, p. 314, he calls attention to the panicle having yellow prickles, and the stem often rather curved prickles. On a bush raised from seed off the Tooting Common bush and grown in the sun the stem prickles increase in number almost to the exclusion of other arms, only sessile and subsessile glands and smaller glandtipt prickles being at all frequent. Some such forma *aprica* Rogers seems to refer to at the end of the description in his *Handbook*. I find the stem distinctly angled, and the basal leaflets of the stem leaves (but not of the panicle leaves) conspicuously stalked (2-5 mm.). Pedate leaves predominate, practically glabrous above; the margins are undulate, the teeth sharp, with fine ciliate points. The flowers are distinctly small, pinkish not white, the narrow obovate petals constantly notched at the apex, the stamens white and only slightly longer than the yellowish styles. Cf. *B.E.C. Rep.*, 1927. Focke has noticed that the supply of stalked glands is variable.

R. Borreri Bell Salter. Winterfold Common, The Roughs near Guildford, and Milford (v.-c. 17); between Bigberry and Canterbury (v.-c. 15); it has been reported from Hayes Common (v.-c. 16), but I have not seen it there.

Bell Salter's original description of *R. Borreri* is a very imperfect and mostly inapplicable description, if it really was intended to describe the bramble bearing that name in the Borrer Herbarium. By Edwin Lees, Babington, Bloxam, J. G. Baker, and until recently by Focke as well, the description was held to apply to *R. Sprengelii*, a bramble, however, which Bell Salter seems to have known well at the time he described *R. Borreri*, as he supplied the account of *R. Sprengelii* for Babington's *Synopsis* (1846). Were it not for Rogers's re-description of the bramble from fresh specimens matched with the Salter specimens, we should hardly know what bramble was intended. The following characters will supplement that description: they are taken from Surrey and Shropshire examples.

Stem glaucous, in full exposure purple, villose and pubescent, both the longer and the shorter hairs being clustered. Prickles patent and declining, considerably hairy when young. Leaflets large, plicate, more or less cuneate-based. Terminal leaflets often with straight sides. Basal leaflets on 1-3 mm. stalks. Petiole thick, pubescent, flat above, armed with rather large curved crimson-based prickles (some glandtipt) and numerous pricklets. Flowering branch clothed to the base with very dense, spreading, moderately long hairs, in which are sunken rather numerous red stalked glands and acicles. Prickles on the rachis and branches crowded, slender, unequal, declining and falcate. Panicle leaves thick, plicate, red-edged, yellowish white and pubescent beneath, scarcely doubly dentate. Flowers rose-coloured in the bud, the wide-open flowers rose-pink, changing to pinkish. Petals obovate or roundish, tapered or cuneate below, clawed, remote. Calyx pale greyish green, segments narrowly white-bordered, with short red tips; patent while the fruit is forming. Stamens white, hardly exceeding the greenish white styles; anthers conspicuously pilose. Young carpels pilose. Fruit perfect, somewhat oblong, composed of exceptionally large carpels when ripe.

R. dentatifolius (Briggs). Farley Heath, near Guildford; Albury Heath, near Shere; and lanes between Farley Green, Brook and Shere (v.-c. 17). This is the first record, I believe, for Surrey or for the south-east of England. My specimens agree with specimens which I have seen, collected by Briggs. Briggs placed his bramble as a variety of *R. Borreri*, but his *R. Borreri* seems to have been something different from the real *R. Borreri*, to which *R. dentatifolius* has no affinity, and it seems best therefore to let *R. dentatifolius* rank as a separate species. I have seen a specimen which is certainly this bramble, collected by C. E. Salmon in a lane leading south from Albury Heath, 19/8/1899; the name given to him for it was *R. lentiginosus*.

The bramble has the habit of *R. sulcatus*. The stem is angled and sulcate, with a few short patent, single or clustered hairs, a very few subsessile and stalked glands, and an occasional pricklet or acicle. Prickles unequal, mostly long and falcate. Leaves digitate, all leaflets long and narrow, gradually acuminate, ending in a long slender point, sharply coarsely doubly dentate, green beneath; basal leaflets on 2 mm. stalks; terminal leaflet oval-obovate, base entire; midrib, petiole and petiolules armed with numerous hooked prickles. Stipules nearly basal, shaggy, glandular.

Flowering branch long and leafy, thinly hairy below, densely hairy above (the hairs mostly tufted), armed with many strong hooked prickles, and many short patent acicles and declining pricklets, and short stalked glands. Panicle narrowly cylindrical with several remote short axillary branches. Leaves many, varying from large 5-nate leaves with leaflets much tapered to the base, to usually one ovate-lanceolate or trilobate leaf.

Flowers pink in bud, becoming nearly white when expanded, starry, the sides of the petals at length rolling back. Petals oblanceolate, tapered into a long slender claw, or almost spatulate. Stamens white, twice as long as the green styles; anthers pilose. Calyx segments greyish green, bearing yellowish acicles and ending in linear tips; patent or loosely reflexed after flowering. Young carpels pilose. Receptacle pilose.

R. Drejeri G. Jensen f. *homoeacantha* Frid. & Gel. The Roughs, near Guildford on the North Downs, and Limpsfield Stone Quarry on the Lower Greensand range of hills, v.-c. 17. Except for the armature the bramble in the foregoing stations matches the Dunster (Somerset) specimens which were identified by Gelert as *R. Drejeri*, and also Danish specimens collected and determined by Friderichsen. It is evident, however, from the descriptions of Friderichsen and Lange that there is a wide range of variation in the armature. Friderichsen puts the species in the *Koehleriani*, whilst Krause puts it in the *Vestiti*, and Focke in the *Egregii* as a sub-species to *R. mucronatus*. Lange quotes two forms established by Friderichsen and Gelert, viz., f. *homoeacantha* with subequal large prickles and very few glandular bristles; and f. *heteracantha* with unequal prickles and numerous glandular bristles. I refer the Surrey bramble to f. *homoeacantha*, and the Somerset bramble to f. *heteracantha*.

R. Drejeri is recorded for Denmark, Schleswig-Holstein, N.W. Germany and Belgium. It will probably be found in Kent.

R. Leyi Focke. A brief reference may be made here to this bramble, which I discovered last summer in a pine wood in Sussex, just across the Kentish border south of Tunbridge Wells. Focke and Sudre record it as frequent in the south-east of Belgium. It will perhaps be found in the parts of Kent and Surrey adjacent to Tunbridge Wells. It most resembles *R. scanicus* Aresch., but has nearly white flowers, a more leafy, less ample panicle, the stem is more angled and the leaves more obovate From *R. chlorothyrsus* Focke, to which also it is allied, it differs chiefly in its broader leaves, broader petals, shorter panicle and weaker prickles. Cf. *B.E.C. Rep.* for 1928, p. 783, under *R. scanicus*.

Some Insects of the Bucktliorn.

By Richard S. Bagnall, D.Sc., F.R.S.E., F.L.S.

Two species of Buckthorn are known in the British Isles, the Common or Purging Buckthorn (*Rhamnus catharticus*) and the Berry-bearing Alder or Alder Buckthorn (*R. Frangula*). Both have medicinal qualities, and the family to which they belong is of some economic importance, including, as it does, the Jujube (*Zizyphus*), *Rhamnus Purshianus*, from which Cascara sagrada (or " Sacred Bark ") is extracted, and several species of *Rhamnus*, including the British ones, the berries of which are used as dyes and in making sap-green paint.

The berries of the Common Buckthorn are powerfully cathartic, but too violent and uncertain in their effects to be used with any degree of safety. Were the berries now in common demand for medicinal or industrial purposes, the gall-midge recorded herein would be classified as a pest of some importance.

The wood of the Alder Buckthorn (generally under the name of Dogwood) is used for charcoal, yielding a very light and inflammable variety required by makers of gunpowder.

To the entomologist, the Buckthorns abound with interest; several species of gall-makers and leaf-miners are peculiar to these shrubs.

The Flowers of the Alder Buckthorn are affected by three species of gall-midges (*Cecidomyidae*) which cause the parasitised flower to remain closed with more or less thickening or hypertrophy of the parts, including the reproductive organs. If such a flower is carefully opened, the minute midge larvae will be found within. In June 1920 I found two of these midges at Hindhead in Surrey, both being the first British records, and I have since found them in other parts of Surrey. They are : —

> *Perrisia rhamni* Rübs., with an ivory white larva; plentiful. This species is not recorded in Houard.
>
> *Contarinia frangulae* Rübs., Houard 4174 (? in part), with a yellow to sulphur yellow larva; more rare.

The Fruit or berry of the Common Buckthorn is also attacked by a gall-midge, as yet undescribed, which causes it to become slightly and irregularly swollen. This larva is sometimes accompanied by another gall-midge larva, presumably an inquiline, and also apparently undescribed. I first found this gall in Surrey in the early autumn of 1930, and during the season noted it in several Southern counties (Kent, Surrey, Wilts, Hants, and Dorset), in some cases in the utmost profusion; indeed, on many trees profusely laden with berries, nearly every berry was affected. I also noted a Surrey bush of the Alder Buckthorn similarly galled.

Although the causer is as yet unknown, von Schlechtendal described the gall from Germany on *R. catharticus* as far back as 1895 (Houard

4067) and six years later Kieffer described a similar gall, also from Germany, on *R. Frangula* (Houard 4075).

The **Leaf** is affected by many types of parasites. Upon it may be commonly found galls of various plant-hoppers (*Psyllidae*), a gall-midge and a gall-mite, and the mines of three of our small moth leaf-miners.

Often the edges of the leaves are found to be discoloured, thickened to a leathery consistency and produced and recurved in the form of a pouch. This is the gall of one of our most striking Psyllids, *Trichopsylla walkeri* Först., striking both in the shape of its wings—reminiscent of a hook-tip moth—and its coloration, and the nymph will be found within the gall. The presence of a small, pallid relative, *Trioza rhamni* Schr., may be deduced by minute depressions on the underside of the leaf, as obscure and unassuming as the causer. Another obscure gall is caused by the vermiform gall-mite, *Eriophyes annulatus* Nal., in the form of a greyish-green pad of hairs (which we commonly call an "crineum"), usually situated at the angle of the mid-rib and a lateral nervure, and in which these microscopic beasties roam.

One finds on the leaves of many plants a round blister-gall or blister-mine; in the Compositae the causers usually belong to the gall-midge genus *Cystiphora*, but on various other plants species of other genera are the causers. It is difficult in this deformation to decide whether it should be classified as a gall or a mine, especially if thickening of the parenchyme is not perceptible. Indeed, on the leaves of the Ash (*Fraxinus*) two such blister-galls are found, one caused by a true gall-midge and the other by a representative of another group of flies, *Agromyzidae*, many of which are leaf-miners. Such a blister is found on the leaves of the Common Buckthorn, and it contains the yellow larva of a gall-midge; both the insect and the gall are as yet undescribed. It is not uncommon in our Southern counties, somewhat local, perhaps, though often appearing in numbers. It was only last September (1930), however, that I was able to dissect out the larva and thus settle the nature of the causer.

Perhaps the most interesting of the moth leaf-mines is the helical mine of *Bucculatrix frangulella* Goeze. It is locally common on both our Buckthorns, and at the first sight has the appearance of a dark spot, very appreciably smaller than the blister just described. If one looks at it more closely, however, one finds that it is a true spiral running off to a tail as long as or even twice as long as the diameter of the mine. There do not appear to be many of this type of mine, but another moth, *Nepticula acetosae* Stt., makes a helical mine on *Rumex acetosa*, and a mining Dipteron, *Liriomyza eupatorii* Kalt., affecting Hemp (*Cannabis*) and *Galeopsis*, is an example in another order of insects.

The worm-like mine on *Rhamnus* leaves, exhibiting many types of twistings and contortions, and generally ranging from pale green or whitish-green to red or purplish-black, is typical of another moth, *Nepticula catharticella* Stt., whilst the irregular patchy "windows" with the thin membrane often entirely gone betray the work of a third moth, *Coleophora ahenella* Hein.

British Butterflies in 1930.

By H. J. Burkill, M.A., F.R.G.S.

I HAVE to express my indebtedness to the following:—Misses E. M. Gibson, C. E. Longfield, and E. M. Miller, and Messrs R. Adkin, E. A. Aris, J. O. Braithwaite, C. L. Collenette, R. Cyriax, W. E. Gaze, F. J. Hanbury, T. H. Harrisson, G. H. Heath, C. Hicks, J. B. Hicks, J. J. Joicey (per W. Hawker-Smith), C. Mellows, J. W. Moore, C. Nicholson, L. B. Prout, G. B. Routledge, E. F. Studd, L. J. Tremayne, J Davis Ward, E. H. Wattson, P. H. Willcox, and C. H. Williams, who have kindly supplied me with reports of the various species.

The information sent in deals mainly with those counties within easy reach of London, but there are also records from further afield which will afford interesting comparisons. Mr Routledge sends notes from Cumberland, Mr J. D. Ward from Lancashire, Mr Hanbury and Mr Adkin from Sussex, Miss Gibson from South Hampshire, Mr Studd from Devon, Mr Nicholson from Cornwall, with the others mostly from near London or from their holiday observations.

For most of us the past year has been a poor one as far as the occurrence of rarities is concerned. The weather was generally cold and deficient in rainfall until the end of the summer. The two short periods of warmth were hardly sufficient to have much influence on insect life, and the absence of sunshine must have militated against the welfare of many species.

Some of the reports are so contradictory that it looks as if there had been injurious influences at work destroying the larvae in some areas, while in others, possibly adjoining, no such conditions can be suggested. This is, however, only a surmise to explain the differences noticeable in the various reports, especially with reference to the species of Pierids and Vanessids.

No individual species seems to stand out conspicuously this year unless it is *Epinephele jurtina* L., which was unusually abundant in most districts. Other species are mostly holding their own, or extending their range, as *Polygonia c-album* L. and *Limenitis sibilla* L., but *Pyrameis cardui* L., which was the feature of 1928, has hardly been seen, only three correspondents reporting " a few specimens," while the other records only amount to six all told.

Papilio machaon L. was recorded by four correspondents in good numbers in its usual localities. *Pieris brassicae* L. is stated by several recorders to have been common, while others emphatically say the opposite. The records date from 27th April, at Wormley, to 15th October in West Hampstead. *P. rapae* L. was generally reported as common, except in Essex where two correspondents saw only a few. One of these has also a similar opinion regarding *P. napi* L. *Euchloe cardamines* L. varied from " very plentiful " to " only a few " in a similar manner.

Mr P. H. Willcox is the only one to record *Leptosia sinapis* L., and then only one specimen was seen, in Hampshire. In 1929 it was stated that this species was increasing in numbers and range, but it rather seems as if there had been a halt this year.

No one has reported *Colias hyale* L., but *C. croceus* Fourc. (*edusa* F.) was seen occasionally, Mr Heath reporting one from a Surbiton garden. Other records were: one in Somerset (P.H.W.); one seen and others heard of, Exmouth (E.F.S.); one from Sidmouth and one from Savernake, 10th October (C.M.); five in Dorset (J.O.B.); one in Essex (E.M.M.); while I watched one in excellent condition on 16th August feeding on Dandelion flowers on the North Downs, Surrey. Mr Adkin mentions that one or two var. *helice* were reported from near Eastbourne, Mr Mellows records one from Sidmouth, and Mr Studd heard of some at Exmouth. *Gonepteryx rhamni* L. was common in most recorded districts but possibly not up to the previous year. Messrs Hanbury and Nicholson both record the insect, and both mention the absence of *Rhamnus* in their neighbourhoods. Mr Hanbury suggests that the larvae feed on some other species of plant. Mr Studd records one with the notification that it is not usually seen near Exmouth.

Apatura iris L. was seen at Hambledon by Mr Joicey in July, and also reported from Lyndhurst by Mr Mellows. *Limenitis sibilla* L. has maintained its recent advance, and has been reported from Buckhurst Hill and Epping Forest. *Polygonia c-album* L. has fallen off, but has been recorded from Hampshire, Surrey, Bucks, Berks, Middlesex, and Devon, the last by Mr Studd (five specimens), where there had been no previous record as far as he was aware in the Exmouth district. Mr E. H. Wattson for the third year in succession has seen the insect in his garden at Twickenham.

One specimen of *Eugonia polychloros* L. was seen on 2nd July by Mr Adkin, and a few were seen by Mr Studd near Exmouth. Of *Aglais urticae* L., Mr Routledge, in Cumberland, says "more numerous in 1930 than usual;" Mr Ward, from Lancashire, says "very common;" Mr Moore, in the Midlands, saw very few; Mr Nicholson, in Cornwall, says "general, but not common." Most others report the species as common, but Miss Miller says it was scarce in the Chelmsford district. Mr Mellows says "less seen than usual." This last agrees with my experience on the Surrey Hills and in Shropshire. Mr Studd reports the capture of a var. with the outer portion of the left forewing cream colour. *Vanessa io* L. was most erratic. It was not seen by Mr Adkin at Eastbourne, but was very common in Mr Hanbury's garden at East Grinstead. Mr Nicholson says "the commonest Vanessid about here" (Truro), while others report it as less plentiful, scarce, or not seen. *Pyrameis atalanta* L. seems to have been locally plentiful in the autumn, but scarce in other districts. Mr Wattson noted them in his garden sleeping under the leaves of Phlox up to 17th October. Miss Longfield says she saw no *P. atalanta*, *P. cardui*, or *V. io* in Co. Cork in the spring.

Of the Fritillaries, *Dryas paphia* L. was reported common in three localities, with *Argynnis cydippe* L. and *A. aglaia* L. plentiful in some others. *Brenthis euphrosyne* L. and *B. selene* Schiff. were both reported by a few observers. Mr Mellows found *Melitaea aurinia* Rott. "not uncommon near Oxford," while Mr Routledge, in Cumberland, saw three, his first record in thirty-seven years there.

Melanargia galatea L. was recorded from four localities, being plentiful in three of them. *Erebia aethiops* Esp. was very abundant and in good condition at Arnside (C.M.). Of *Hipparchia semele* L. there were several good records. *Pararge aegeria* L. is increasing its range again; *P. megaera* L. was plentiful; *Epinephele jurtina* L., very abundant; *E. tithonus* L., generally abundant; and *Aphantopus hyperanthus* L., generally recorded. *Coenonympha tiphon* Rott. was reported by Messrs Routledge and Ward from the north; *C. pamphilus* L. was common in most places, but in others not up to its usual numbers.

Among the Hairstreaks, *Zephyrus betulae* L. is said to be increasing in abundance in Northants, while the larvae of *Z. quercus* L. were abundant (C.M.). *Thecla pruni* L. and *T. w-albun* Knoch were fairly common.

Chrysophanus phlaeas L. was patchy, common in some places, and absent in others. Some good varieties were taken in Kent.

Of the Blues, *Plebeius aegon* Schiff. was reported plentiful in West Kent and the New Forest; also seen in south Bucks (E.H.W.). *Aricia medon* Esp. was fairly common on Hampshire Downs (E.M.G.). *Polyommatus icarus* Rott. was general, but not always common. *Agriades corydon* Pod. was abundant in Hampshire (E.M.G.); several were seen in Surrey (H.J.B.), but few at Royston (E.A.A.). *A. bellargus* Rott. was again very common in its usual haunts (R.A.); several were seen in Surrey (H.J.B.). *Celastrina argiolus* L. was very variable, but seemed to be noticed in fresh areas, and was locally abundant.

The Skippers seem to have been mostly normal, but Mr Routledge saw no specimens of *Nisoniades tages* L. in places where he usually sees a few. Mr Mellows recorded *Thymelicus actaeon* Esp. as being very abundant at Swanage.

Heterocera Notes, 1930.

By H. J. Burkill, M.A., F.R.G.S.

Sphingidae seem to have been noticed in greater numbers than for some seasons, those most frequently reported being *Herse convolvuli* L., *Sphinx ligustri* L., and *Chaerocampa elpenor* L., the larvae of the last being especially conspicuous in the autumn, a state not to be wondered at when we consider the enormous spread of one of its food plants—*Epilobium angustifolium*, though larvae that I obtained from *E. hirsutum*, when given their choice between this plant and *Galium Mollugo*, *G. verum*, and *G. palustre*, preferred the four in the reverse order to that in which they are named here. Certainly *G. palustre* seemed to be the more succulent in September when the *Epilobium* showed signs of turning colour, and that might possibly explain the preference. *Acherontia atropos* L. was reported from Elstead, Surrey (W. Hawker Smith), and *Smerinthus ocellatus* L. and other species from various districts. Mr Adkin, however, comments on the scarcity of *Macroglossa stellatarum* L. at Eastbourne.

Mr Routledge says "moths were generally scarcer and some species which were common between forty and fifty years ago are never seen now. The cold and wet springs and summers have been against collecting." He adds that the dust of motor traffic and the putting down of tar macadam have been injurious to insect life on the road-sides, so that more specimens are to be seen on railway embankments. Among the species that seem to be disappearing from his district (North Cumberland), he mentions *Arctia caia* L. and *Cosmotriche potatoria* L. He states that *Epineuronia popularis* F. was abundant at light, males only, while *Triphaena pronuba* L. was very abundant at sugar. Among his other captures were two specimens of the melanic form of *Phigalia pedaria* F., new to him in that area, and four *Venusia cambrica* Curt. Mr E. F. Studd from Exmouth says: "It has been a good year for light. Many insects which were common last year were scarce this, for instance, *Noctua primulae* Esp. (*festiva* Hb.) and *Omphaloscelis lunosa* Haw., and many which were scarce last were common this, for instance, *Agrotis corticea* Hb., *Tholera cespitis* F., *Cilix glaucata* Scop., and *Eupithecia oblongata* Thunb." Among his captures at light were *Callimorpha hera* L., *Lasiocampa trifolii* Esp., *Demas coryli* L., etc. He adds: "The year has been notable for the number of females taken in the trap, in some instances exceeding males. This has only occurred once before in my experience of over forty years' working. Curious instances this year were *Drymonia chaonia* Hb., 1 female and only 1 male; *Pyrrhia umbra* Hufn., 1 and 0; *Lasiocampa trifolii* Esp., 1 and 1; *Plusia chrysitis* L., 1; *Dianthoecia capsincola* Hb., 3; *Notodonta dromedarius* L., 1 and 1; *Geometra papilionaria* L., 1 and 0; *Epione apicaria*, 1 and 0; *Pachys betularia* L., 1 and 0; *Agrotis strigula* Thunb., 1 and 0; *Aphomia sociella* L., 1 and 0. Of course, several females of other species were taken, but not so unusual. Can anyone explain the cause of this? Is it that in some years light is more attractive to females, or is it that Lepidoptera, like pheasants, have what we used to call 'a female year,' when females largely exceeded males?"

Miss Gibson says: "Sugaring produced a considerable number of *Leucania turca* L., but very little besides. The usual common species were much less plentiful than usual." She reported several Sphingid larvae.

Mr C. Hicks found light good up to the end of June, after which there was a falling off. Among his captures were *Drymonia trimacula* Esp. (several), *Notodonta trepida* Esp., *Lymantria monacha* L. (freely), *Apocheima hispidaria* F. and *Pachys strataria* Hufn. Mr Mellows says that several of the autumn moths were very abundant and that *Poecilocampa populi* L. came to the street lamps in hundreds in early November.

Mr T. H. Harrisson records *Lobophora polycommata* Hb., *Agrotis stigmatica* Hb., and *Apocheima hispidaria* F. from Harewood Forest, Hants, and two specimens of *Leucania brevilinea* Fenn. from the Norfolk Broads, while *Acontia luctuosa* Esp. was very plentiful in North Hampshire.

Mr C. Nicholson sends a list of some of his records from Cornwall, and states: "I have seen nothing yet of *Tortrix viridana* L., which does not occur here apparently, probably because the prevailing Oak is *Quercus sessiliflora*, which it does not feed on, judging from the fact that the trees of that species in Epping Forest always escaped its attack."*

Round London this pest seems to have made its re-appearance in a few places after some years of immunity. Many of the trees (*Q. Robur*) on the higher ground on Epsom Common were badly attacked in the early summer.

A year ago Mr Talbot recorded *Polia flavicincta* F., taken at light at Wormley, Surrey, on 18th September. Mr Hawker Smith gives some interesting details regarding this capture. The insect, a female, laid 64 ova the next day and 39 on 20th September. The first larva hatched on 24th February 1930. Others hatched at intervals, but only two or three at a time. They were fed on Chickweed (*Stellaria media*) at first and afterwards reared on Hogweed (*Heracleum Sphondylium*). The first pupated on 26th April. A large number died, but on 13th September the first imago emerged. Others appeared at intervals during September and the last on 2nd October. The principal difficulty in rearing them seems to be the erratic hatching of the ova. A number were lost owing to their hatching when some of the earlier larvae were well grown, and the remaining eggs appearing dry, had been given up as dead. They require to be watched daily until all have hatched.

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*According to Professor J. W. Munro, the newly-hatched larvae of *T. viridana* are only able to attack oak leaves that are just unfolding from the buds, and *Q. sessiliflora* is normally immune from this pest in England because it is earlier in coming into leaf than *Q. Robur*, and its buds open before the eggs of the moth hatch. In Mediterranean countries *Q. sessiliflora* and *Q. Robur* come into leaf together, and both are equally attacked.—Ed.

Birds of the Harrow District*

(NORTH-WEST MIDDLESEX),

1925-1930.

By T. H. Harrisson, M.B.O.U.

Sections :

I. Introduction.
II. Area.
III. Changes in Status.
IV. Migration.
V. Acknowledgments.
VI. Specific Notes.
VII. Bibliography.

I. INTRODUCTION.

This paper is the result of observations made by my brother (W. R. D. Harrisson) and myself during six years (1925-1930) while members of Harrow School. Our notes are supplemented and modified by those of other observers, who have very kindly put their information at our disposal. Though in many respects incomplete, the paper seems justified by the remarkable absence of any recent contributions to the ornithology of the district. The data given on ducks, waders and terns are in some cases very unsatisfactory, owing to the absence of regular observation at any of the reservoirs or sewage farms. Nevertheless I have received reliable records of 157 species since 1925, a total considerably larger than any recorded since 1887 for any one district within the London area (see *L.N.*, 1928, p. 37, and 1929, p. 88).

There can be no doubt that the northern part of the district is of considerable importance as a nesting ground for many species, for during the past five years no less than 82 species have bred regularly (including Hawfinch, Corn Bunting and Woodcock), while three more (Cirl Bunting, Woodlark and Long-eared Owl) have nested at least once, bringing the total to 85. In addition to these there is incomplete or unsatisfactory evidence in the case of Grasshopper Warbler, Wheatear, Tufted Duck, Land-Rail and Water-Rail. W. E. Glegg's estimate of regular breeding species for all Middlesex (*L.N.*, 1929) is only 83!.

No attempt has been made to deal with " rarities " (which number 32) here, as these will be fully dealt with by Mr Glegg in his forthcoming work on the birds of Middlesex. Only birds recorded on several occasions, or birds believed to be regular, are included. The nomenclature followed is that used in *A Practical Handbook of British Birds*, by H. F. Witherby.

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*This article is being reprinted and sold separately at Harrow, by arrangement between the London Natural History Society and the Harrow School Natural History Society.

II. AREA.

The area selected has necessarily been controlled by arbitrary boundaries. I found it most convenient to study a circle with a radius of five miles, St Mary's Church (Harrow-on-the-Hill) being the centre.*

The boundary of this area, starting from the north and travelling clockwise, runs through Elstree (Aldenham) Reservoir, east of Mill Hill L.M.S. Station, west of Hendon and Brent Station, through Harlesden, Willesden Railway Works, Ealing Common, Wood End (Hayes), Ickenham, Duck's Hill (Ruislip), Sandy Lodge Golf Course, Watford Heath and Bushey.

A small portion (near Elstree and at Bushey Heath) is in Hertfordshire; the rest is in Middlesex.

The whole is of London Clay, except for Harrow Hill, which is capped with a lower Bagshot Sand.

W. E. Glegg has described Middlesex as " an undulating plain sloping towards the Thames and its tributaries;" this well describes the Harrow district. There are few hills, though at Stanmore is the highest point in Middlesex (just over 500 ft.) and Harrow Hill is more than 400 ft. There is an almost complete absence of heather-heath land, and very little gorse, beech, pine or bracken—these botanical types being largely excluded by the clay soil factor. Most of the park land in the district has been spoilt by the formation of housing estates.

For convenience, five main types of country which have a marked influence on the bird population may be recognised.

(i) HOUSES. The great extent of recent housing development, especially in the southern part of the district, has had a very marked effect on the birds, which is dealt with in Section III.

(ii) WATER. The only waters of importance are the reservoirs, of which there are three—The Brent (Hendon), Elstree (Aldenham) and Ruislip. These differ from the other London reservoirs in that they have natural sides, and in consequence the great masses of zebra mussels (*Dreissensia*) found on concrete-banked reservoirs do not occur here, so that duck and other wildfowl are comparatively scarce. In the summer the reeds at Ruislip and Elstree enable a number of species to nest. Boating, fishing and shooting are permitted to a certain extent, but do not affect the birds very much. The Brent is being seriously affected by the recent introduction of " speed boats."

Regular observation is badly needed at these waters.

A full account of all the London reservoirs is given in an article by A. Holte Macpherson (*L.N.*, 1927).

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*The greater part of this area lies within Division 4 of the London Natural History Society's district, but that part of it to the south and east of the River Brent is in Division 6, and a very small area on the north, near Bushey, is in Division 5.

The Mill Pond at Southall is the only other water of any ornithological importance.

(iii) SEWAGE FARMS. The sewage farms are divided into two types —the "clinker bed-filter spray" type, which is quite unsuitable for nesting birds; and the old "open field" type, which may support many interesting nesting species but is unfortunately being gradually modernised. The South Harrow Sewage Farm is the only one which has been watched at all regularly; the observations made by my brother and myself there have shown the remarkable scarcity of passage birds, which is dealt with in Section IV.

(iv) WOODS. The only important area of woodland is that at and around Ruislip, mainly of the oak-hazel type. These woods are preserved for game, and in consequence many interesting species nest here undisturbed. Unfortunately the edge of Copse Wood is now threatened by land developments.

There are other patches of woodland at Harrow Weald, Horsendon Hill, Elstree, Perivale, and elsewhere. Perivale Wood is a sanctuary of the Selborne Society, and several unusual birds have nested there.

(v) BIRCH COMMONS. A considerable area near Bushey Heath and Stanmore (including Harrow Weald and Stanmore Commons) is covered with small birch trees and associated vegetation. The Woodlark has nested here, and the Siskin is a regular winter visitor.

(vi) OPEN COUNTRY. The major part of the district, excluding "housing areas," is open country, consisting mainly of mediocre grassland, golf courses and recreation grounds, with elm as the dominant tree. Only a small acreage is under the plough, and much of it is awaiting housing development.

III. CHANGES IN STATUS.

The changes which are going on at present in the status of many species round Harrow are a remarkable feature of the district. During the period 1925-1930 I have noted a definite increase in at least 27 nesting species, and a decrease in only 7. This has been fully confirmed by E. H. Warmington, G. H. Rountree, the late E. P. Thompson, and my brother—all of whom have paid special attention to the matter. At a glance it seems quite extraordinary that many species should be increasing at their present rate, while houses and housing estates are appearing with great rapidity all over the district (and especially close to Harrow) on sites previously ideal for nesting birds, even including woods and parks.

Yet there cannot, I think, be any doubt as to the correctness of the observations which lead me and my correspondents (independently) to conclude that the majority of species *are* increasing. Most of my statements are based on actual census work, carried out annually. This I hope to continue during the next few years, with the assistance of my brother.

I venture to suggest, on the evidence so far obtained, and as a tentative theory, that in the vicinity of Harrow Hill this increase is actually due to the great increase in the number of houses and housing estates. My belief is that the birds, and especially the summer migrants, are becoming concentrated in the comparatively small areas which have not yet been touched by the builder. One of the results of ringing with Witherby's rings has been to show that many species tend to return to the localities where they were themselves reared, and it therefore seems reasonable to suppose that birds return to their old sites in this district, and when these are becoming " developed " by the builder, tend to remain in the vicinity and nest on the nearest suitable spot. In consequence, birds are pushed into small areas, though obviously there is a very definite limit to their concentration. Thus the " increases " observed by ornithologists in this district are not true increases, but *apparent* increases. For while the birds have been compelled to leave many old nesting sites and have thus decreased and disappeared from these, they have reached a maximum density in the available nesting areas.

It is not possible for me to give here all the data supporting my view, and for that reason it must remain tentative. But a few examples will illustrate. The Red-backed Shrike, Bullfinch, Jay, Nightingale, and Lesser Spotted Woodpecker are generally considered to avoid towns. Yet during the past four years these five have all appeared at Harrow and increased steadily, and all four may now be found nesting actually on Harrow Hill. Blackcaps have increased to a remarkable extent, as have Chiffchaffs, Garden Warblers, Nuthatches, and Greater Spotted Woodpeckers. Not one of these nested at Harrow between 1925 and 1927. From 1928 onwards a steady increase has occurred. The increase of the Willow Warbler has been astonishing. In the Park (at Harrow-on-the-Hill) there were none nesting in 1925 or 1926, one pair in 1927, two pairs in 1928, three pairs in 1929, and eight pairs in 1930. Yet over three-quarters of the nests at this locality have been robbed each year. The Spotted Flycatcher and Yellow Wagtail have increased to a marked extent, though robbed repeatedly. In 1928 the Red-backed Shrike nested at Wembley and Southall. During 1930 Wood Warblers started nesting in a number of copses which would appear quite unsuitable, and there was a marked increase of the species in the district. There are, of course, certain species, such as the Goldfinch, which have increased, on account of some separate factor or factors. There are others, as the Carrion Crow, which have benefited in a more direct fashion. A very few, such as Stock Dove and Magpie, have decreased. With the former I believe this to be due to the great decrease in suitable nest sites; with the latter to excessive game preservation at its local centre of distribution. But in the case of the Warblers, Flycatchers, and Woodpeckers (to take three groups), it seems absurd to state that they are genuinely and actually increasing. If so, the increase would appear to be peculiar to this one district, as it has not been noted elsewhere!

All the evidence at my disposal leads me to believe that this increase is in reality only a local concentration. I am well aware that there are weak points in the argument. But I feel that some suggestion should be made to account for the remarkable increase which has occurred in many cases, and the mere accumulation of a mass of facts is scarcely satisfactory. I hope to collect much more evidence in the next few years.

IV. MIGRATION.*

During the past five years I have collected a good deal of information on migration, both by day and night, chiefly through the efforts of E. H. Warmington, D. L. Lack, G. M. Sheldon, L. Parmenter, W. S. Taylor and the late E. P. Thompson. These observations are as yet incomplete, and are too detailed to be given in full here, but I may venture to make a few general and preliminary suggestions. These are purely tentative, as are all suggestions referring to inland migration routes in England, and no doubt they will require much modification and alteration in the light of further work.

There is a very considerable north and south passage through the district, but I believe that this is largely (and to a remarkable extent) localised in the eastern part of the district, and is especially concentrated at Hendon and Mill Hill. The scarcity of passage migrants (*i.e.*, birds passing right through, and not staying) in the western part of the district is very marked. Certain species, such as the Hirundines, are fairly general throughout the district on migration;† others, such as the Yellow Wagtail and Whinchat, appear to be more or less general, though more numerous in the east. But a number of species are noticeably scarce in the west as genuine passage migrants, and yet numerous (often abundant) in the extreme east. The Sedge Warbler, though breeding at Harrow and Ruislip, is very scarce there as a bird of passage. Yet at the Brent and the Stanmore Sewage Farm, where it does not breed, I have seen remarkable numbers on both passages.

The case of the Wheatear is an even better illustration of this eastern concentration. At the Brent, Mill Hill and Edgware the species is often numerous on passage and fair numbers occur at Elstree. None nest in the district. Yet during five years I have not seen a single Wheatear at Harrow, and my brother's only record refers to the Greenland race. Moreover, G.M.S. notes the date of arrival at Ruislip and Northwood as April 30th. No doubt Wheatears do occur, and quite often, west of Harrow (though I have no records), but there can be little doubt that as compared with the east they are conspicuously scarce.

Small numbers of Hooded Crows are noted more or less regularly at Elstree and Edgware, but nowhere else, and these may be passage birds. But conclusions based on Passerines are not altogether satisfactory. An examination of waders, gulls and ducks may carry the matter a stage further.

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*For data on local migration see under Buntings, Grey Wagtail, Marsh Tit, Goldcrest, Blackbird, Redshank, etc., in Specific Notes.

†But the House Martin appears to be concentrated. (E. H. Warmington.)

During the period 1925-30 I have watched the South Harrow Sewage Farm regularly, and have only once seen a passage wader (Green Sandpiper). Yet, in my experience,* the farm is very suitable for passage waders. During the past five years no less than fifteen species of wader have been observed at the Brent Reservoir, though one would hardly expect to see any birds at all there at the present time. At Elstree eleven species have been noted; at Ruislip four species only, though this reservoir has been more regularly watched than any other. I have no definite records of Dunlin, Ringed Plover, or Green Sandpiper at Ruislip, all three of which are regular at Elstree and the Brent.

It is, of course, possible that Ruislip is quite unsuitable for waders, but I do not think so, for Dunlin and Ringed Plover occur annually even on the concrete-banked reservoirs at Littleton, Staines and Barnes! The scarcity of waders both at the Harrow Sewage Farm and at Ruislip would seem very strong evidence. Even the Common Sandpiper is noted as " irregular " at Ruislip by G.M.S.

There can be little doubt that the passage of Lesser Black-backed Gulls is almost entirely confined to the extreme east of the district. Terns, and the Common Scoter,† have been observed at Elstree and the Brent, but never at Ruislip.

Night observations have been made—with standardised methods—by E.H.W., E.P.T., and myself. These show beyond any doubt that there is a very considerable volume of night passage over Mill Hill (including Snipe, Dunlin, Redshank, Greenshank, Common Sandpiper, Curlew, Lapwing, Stone Curlew), going nearly due north in spring, and south in autumn. At Elstree only Dunlin, Redshank and Curlew have been noted, and there is much less passage there. At Harrow I have only heard Dunlin (twice) and Redshank (once), though I have spent many nights on the watch. It therefore seems that the volume of wader migration by night is considerable over Mill Hill, moderate at Elstree, and small at Harrow.

Considering these data as a whole, it is difficult to avoid the conclusion that the migration is much more marked in the extreme east of the district than in the centre, and that there is very little migration in the west. It is possible to find another solution for many of the individual points raised above, but the weight of the many points together is strongly in favour of this view. I do not attempt to assert that there is no passage in western parts of the district, or that there is a thin flight line over Hendon and Mill Hill. I merely suggest that there is a concentration of migrants, passing north in spring and south in autumn, over these places. The edge of this concentration would appear to touch Elstree, and, to a much less extent, Harrow. It would appear to miss Ruislip almost entirely. The eastern edge of the "concentration band" may lie some way east of the district.

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*I have watched at a number of other sewage farms in other areas.

†C. Oldham has shown that the Common Scoter is a passage migrant inland in Herts. (See annual bird reports in *Trans. Herts. N.H.S.*)

The Hendon-Mill Hill route may be in part a branch from the Thames migration route described by W. E. Glegg (*L.N.* 1928), though it is very probable that there is also a direct line from the Sussex coast through the district to the North Norfolk coast. It seems probable that the route in question is connected, either directly or indirectly, with that so fully studied at Cambridge by the members of the Cambridge Bird Club (see *Cambridge Bird Club Report*, 1930, and *B.B.*, xxiv, p. 145). It would appear quite probable that there is a direct line between Sussex, the Brent, Cambridge, and the Wash*, for the direction of flight taken by many birds at Cambridge would lead direct along this route, which would be only about 140 miles, or less than three and a half hours' flying for a normal wader (see Meinertzhagen, *Ibis*, April 1921, p. 369). I must emphasise the fact that, except in the case of the Swallow and House Martin, I have no evidence whatsoever for any sort of east and west migration through any part of the district. It would seem that the main east and west migration route along the Thames (Glegg, *L.N.* 1928) has a comparatively narrow front, which does not affect the Harrow district.

There can be no doubt that the great bulk of migration passes over by night, and that the birds observed by daylight represent only a very small fraction of the whole.

Further observations will no doubt disprove and modify much of the above; these views are advanced as a contribution, and not as a conclusion. I hope to obtain many more data on migration in the district, and, if this proves of any particular interest or significance, to publish it in full at some future date.

V. ACKNOWLEDGMENTS.

I should like to thank all those who have helped in this work, and particularly Dr Cyril Norwood, D. M. Reid, and the Harrow School Natural History Society, for their moral and financial support. The assistance of my brother has proved invaluable. I have had the benefit of much helpful criticism from C. Carlile, W. E. Glegg, A. Holte Macpherson, J. C. Robbins, and A. Vassall.

I am most grateful to those observers who have allowed me full use of their detailed and unpublished notes, which have proved of great value, namely:—

E. H. Warmington (E.H.W.), T. B. Andrews (T.B.A.), Gilbert H. Rountree (G.H.R.), Rev. G. M. Sheldon (G.M.S.), W. Sneyd Taylor (W.S.T), W. Mark Webb (W.M.W.), Miss H. Curry (H.C.), J. J. Wilkinson (J.J.W.), D. Kentish (D.K.), and the late E. P. Thompson (E.P.T.).

I am also indebted to over thirty others (mentioned in the text) who have contributed observations, which have been useful to me, and, in

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*Dr N. H. Joy, as a result of his observations at the Reading Sewage Farm (*B.B.*, xvi, pp. 53 and 203; xviii, p. 11) has decided that there is a flight line through England north and south via Reading.

particular:—H. S. Button, P. W. Cheese, the Duke of Grafton, J. P. Hardiman, D. L. Lack, T. H. Newman, C. Oldham, L. Parmenter, R. W. Pethen, B. W. Tucker, C. Weeks, and B. H. Wormald.

Unless otherwise stated, the observations are my own. All observations refer only to the district within a five mile radius of St Mary's Church, Harrow-on-the-Hill.

VI. SPECIFIC NOTES.

HOODED CROW. *Corvus cornix cornix* L.

Irregular visitor, from October to March.

During the winters of 1925 and 1927 single birds frequented the head of Elstree Reservoir and the vicinity of Edgware (as noted by T.B.A. and self).

During January 1930 several were present round Elstree. E.H.W. also saw one on January 1st, 1928.

CARRION CROW. *Corvus corone corone* L.

Common.

Owing to the scarcity of game preservation, considerable numbers nest—chiefly in elms on the open land and golf courses.

In 1929 I estimated 24 pairs within 1½ miles of St Mary's Church. Harrow-on-the-Hill, giving a density of 3.4 pairs to the square mile, which is very high indeed. Flocks of up to fifteen occur in October and November round Barn Hill.

ROOK. *Corvus f. frugilegus* L.

Common in the northern part of the district; very scarce in the south.

During the last three years I have made a close study of the numbers of nesting Rooks here. The results are very remarkable.

In 1928 there were eighty-four nests within a four-mile radius of Harrow Hill. In 1929 there were fifty-five in the same area. In 1930 I covered the whole district (five-mile radius) and found three hundred and sixty-one pairs. The variation over the area, and in each rookery considered separately, is astonishing.

Thus the Kenton rookery in 1928 had sixteen nests, in two parts. In 1929 there were twenty-two nests, still in two parts. In 1930 there were no less than seventy-seven nests in four parts.

The Edgware rookery had fourteen nests in 1928, and seventeen in 1930.

The Eastcote Station sub-rookery had three in 1928, eight in 1929, and twelve in 1930.

There has been a similar marked increase in the Pinner group. Thus the "Old Reading" site was not occupied until 1928 (observation confirmed by T.B.A.), yet in 1929 there were fifteen nests, and in 1930 forty-four, and sixty-six more in two sub-colonies.

An increase has also occurred in the Weald Park rookery.

However, there has also been a local decrease in the form of elimination of small rookeries. During 1928 the Green Lane rookery (eight nests) ceased to exist, and apparently shifted to Pinner.

In 1929 the Manor House colony at West Ealing (two nests in 1928, and previously a flourishing colony) became extinct, as did the Greenford colony (five nests in 1928). In 1930 the four pairs which nested on Barn Hill in 1929 left the site.

It appears from the above brief summary of the data I have collected (details of which I hope to publish elsewhere in some years' time) that the Rook was probably seriously affected by rapid land development for housing up to 1929, but that in 1930 it had readjusted itself to its changing environment and made a more or less complete recovery. Exactly the same has occurred in the case of Carrion Crow and Ring Dove. It will be most interesting to see what happens in 1931, when I shall repeat the count.* It is possible that these figures represent a cyclic fluctuation, but I doubt it. At present the largest colony is the Pinner group, of one hundred and ten nests; the smallest is that at Northwood, with sixteen. There are nine main rookeries, divisible into twenty-two sub-rookeries. The density for the area (1930) works out at 4.6 pairs to the square mile, which is very low when compared with figures available for Cambridge, Oxford, Romney Marsh, and elsewhere; but as a very large part of the district is covered with houses, and there is one big area of woods, the effective Rook area is probably less than a quarter of the district, so that the corrected density would be over 13 pairs to the square mile, which is moderate.

JACKDAW. *Coloeus monedula spermologus* (Vieill.).

Quite common.

It nests mostly on public buildings, and the number of pairs using old trees is remarkably small, though there are several localities with plenty of suitable tree sites. There were between twelve and fourteen pairs within one mile of Harrow-on-the-Hill Church in 1929.

MAGPIE. *Pica p. pica* (L.).

Nests at only one locality.

Since 1924 several pairs have nested annually at Hartsbourne Manor, but nowhere else in the district. In 1928 there were four pairs, but in 1929 only one pair. In 1930 three pairs nested and reared young, though the locality was seriously threatened by housing developments.

Every year the young disappear (apparently leave the district) soon after they leave the nest (T.B.A.).

One was seen at Edgwarebury by L. Parmenter on April 29th, 1926 (*L.N.*, 1926, p. 53), and E.H.W. has seen one or two near Mill Hill.

JAY. *Garrulus glandarius rufitergum* Hart.

Common, except in the southern part of the district.

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*Since going to press, I have taken the 1931 count, which gave 278 pairs, a decrease of roughly 25 per cent. This is partly, but not entirely, explained by tree felling at Pinner and Kenton.

In some localities (Elstree, Stanmore, and Mill Hill) it has definitely increased within the last four years, while since 1928 the species has definitely recolonised two localities in the immediate vicinity of Harrow Hill. It is uncommon at Southall and Hanwell, though it has attempted to breed (G.H.R.).

Starling. *Sturnus v. vulgaris* L.

Common.

A marked increase has been noted in the London Area of late, but this is not very conspicuous round Harrow, though in 1930 the number of pairs nesting in trees went up by 300 per cent. The new type of house does not seem to suit the Starling very well. (See also under Green Woodpecker.) During winter large flocks forage on the sewage farms. I have been unable to make detailed observations on the roosts and flight lines, as there is no roost in the area. The birds from the western half of the district and the land just west of Harrow go to a roost near Harefield, outside the district. At Hendon, Kingsbury, Mill Hill, and elsewhere, flocks go straight towards London, to roost in the public buildings there (Royal Exchange, St Paul's, etc.). I have twice (January, 1929) seen large parties going north-eastwards from Elstree, and while outside the district at Boreham Wood (November, 1930) have seen them making for a point east of South Mimms.

Hawfinch. *Coccothraustes c. coccothraustes* (L.).

Very scarce as a nesting species.

A few pairs still breed at Northwood (G.M.S. and J. McKechnie). A pair bred on Harrow Hill in 1927 and 1928 (*L.N.* 1928, p. 76) and in 1930 two pairs were known to nest.

E.H.W. notes it occasionally round Elstree, as does T.B.A. at Bushey Heath (including July 29th, 1925), but neither of these observers suggests nesting. The only recent record I have for the area south of Harrow is of one seen at Dormer's Wells "during 1928" (G.H.R.); though W.M.W. includes it in a list of species which have bred at Perivale Wood, he gives no recent dates.

Greenfinch. *Chloris c. chloris* (L.).

Regular nesting species, nowhere common (except in 1930).

Prior to 1930 it was unusual to find more than two or three nests in any one locality. But in 1930 there was a very marked increase at Harrow, and my brother found twenty-four nests. The nest mortality of the young was very high, however. It will be interesting to see the status of this bird in 1931.

Large flocks forage on the sewage farms and elsewhere in winter, and I have seen flocks of over one hundred and fifty in late April and early May. At Southall in 1929 a Greenfinch built a nest immediately adjoining that of a Red-Backed Shrike, with no evil consequences (G.H.R.).

Goldfinch. *Carduelis carduelis britannica* (Hart.).

Now well established as a breeding species.

Prior to 1926 it was more or less extinct as a nesting bird. During 1927 several were observed (but no cases of breeding proved), and two men at Elstree were fined £5 each for taking Goldfinches in nets.

In 1928 I found three nests actually on Harrow Hill, and saw pairs at Elstree, Horsendon Hill, and Stag Lane; nests were also noted at Ruislip (J.J.W.), Bushey (T.B.A.), and Southall (G.H.R.), while a general increase was noted (and especially at Mill Hill) by E.H.W.

In 1929 the population was much as in 1928, though a number appeared at Wembley Park (T. H. Newman). In 1930 there was a further slight increase at Harrow (W.R.D.H.), and Bushey Heath (T.B.A.).

SISKIN. *Carduelis spinus* (L.).

Regular winter visitor to Harrow Weald Common; irregular elsewhere.

T.B.A. notes Siskins every winter at Bushey Heath, often quite numerous. One or two usually arrive in late December, and a maximum is reached in February. On February 23rd, 1929, I saw over fifty (*L.N.*, 1929, p. 99).

It is curious that there is only one record for Stanmore Common—March 8th, 1925 (H.C.). An early bird arrived on October 24th, 1925, at Mill Hill (E.H.W.). I saw fifteen at Ruislip on March 22nd, 1929, the only record from that locality.

Harting (*Birds of Middlesex*, p. 86) considered the Siskin an uncertain visitor, while W. E. Glegg (*L.N.*, 1929), in bringing Harting's statement up to date, says " its visits have become still more uncertain." In view of the above data, it is difficult to agree with this statement.

LESSER REDPOLL. *Carduelis linaria cabaret* (P. L. S. Müll.).

Rather scarce as nesting species.

I have only found one nest in the district, at Harrow in 1928. G. Warde Jackson has shown me an egg taken at Harrow in 1927. T.B.A. finds it " fairly common " at Bushey Heath, and E.H.W. says " breeds locally at Stanmore and Harrow Weald." Birds were present throughout the summer of 1929 at Stanmore Common (L. Parmenter, *L.N.*, 1929, p. 99). I can find no evidence for the increase noted by W. E. Glegg (*L.N.*, 1929).

LINNET. *Carduelis cannabina cannabina* (L.).

Well distributed, but nowhere common as a nesting species.

Only T.B.A. (at Bushey Heath) finds it common. I have not seen more than two nests in any one year round Harrow, and my brother found it scarce in 1930.

BULLFINCH. *Pyrrhula p. nesa* Math. & Ired.

Fairly common locally, but very unevenly distributed. Increase in 1930.

In the northern part of the district it is fairly common in places, but to the south it is scarce and has been much affected by houses. At Harrow-on-the-Hill I found one nest only between 1925 and 1929. Yet in 1930 my brother found eight nests and ringed a considerable number of young birds in the immediate vicinity of the Hill.

CROSSBILL. *Loxia c. curvirostra* L.

Scarce even in "Crossbill years," owing to scarcity of conifers. In 1927 there were considerable numbers at Northwood, the first birds arriving in July. Throughout August small parties were constantly to be seen, and G.M.S. had a flock estimated at 60 reported to him on reliable authority. None appeared elsewhere in the district, except a solitary bird at West Ealing on August 6th (*L.N.* 1927, p. 40). I could find none at Northwood either in 1928 or 1929, though both these were minor "Crossbill years."

CHAFFINCH. *Fringilla c. coelebs* L.

Common.

In 1927 I found a complete lined nest before eggs were laid. The birds resented my fingering the nest, and built again in a bush ten yards from the original site, using a considerable amount of the material from the old nest, including most of the lining. In June 1930 a young one was caught and killed in the hair lining of a nest at Harrow (*cf. B.B.*, xxiv, p. 103).

BRAMBLING. *Fringilla montifringilla* L.

Irregular winter visitor, never common, from November to March.

A few birds occur annually on Harrow Weald, at Grove Park (Elstree), and near Mill Hill. G.H.R. also notes it as occasional at Southall, and E.H.W. has a record for the Brent Reservoir on April 21st, 1929—clearly a late migrant. Rare, but regular at Moor Park (G.M.S.).

HOUSE SPARROW. *Passer d. domesticus* (L.).

Abundant. Is favoured by increased number of houses in this district.

In June, 1929, I observed a case of House Sparrows breaking the eggs of a pair of Spotted Flycatchers at Harrow (see *B.B.* xxiii, p. 189, for full account).

E.H.W. sends me an account of a fight between a House Sparrow and a Pipistrelle Bat (*Vesperugo pipestrellus*), which he witnessed at Ruislip (in March).

TREE SPARROW. *Passer m. montanus* (L.).

Very local, but regular breeder in small numbers. More generally distributed in winter.

During 1928 I found small colonies at South Harrow, Edgware, and Elstree.

As many as fourteen pairs have bred at Perivale Wood (W.M.W.). W.S.T. suspects nesting at Kingsbury, and G.H.R. believes that some nest regularly near Southall.

CORN BUNTING. *Emberiza c. calandra* L.

Scarce nesting species only. One winter record.

This species would no doubt increase, if allowed to do so, but nearly every nest near Harrow is robbed by Harrovians. Since 1925 two pairs have nested every year (except 1929) between South Harrow and Northolt, though seldom with success; in 1930 both nests were robbed. No doubt the birds will soon leave the locality. A pair frequented a spot near Elstree Reservoir in the summer of 1929, but no effort was made to find the nest (T.B.A.; also *L.N.* 1929, p. 98).

G.H.R. notes it as having nested near Southall, but he gives no details or dates. One was heard singing near Hendon on June 11th, 1929; no attempt was made to find the nest (E.H.W.). It is included, without comment, in a list of birds "seen" near Perivale Wood (W.M.W.).

It is curious that there is only one winter record—three birds seen by me at the South Harrow Sewage Farm on February 22nd, 1930.

YELLOW BUNTING. *Emberiza c. citrinella* L.

Fairly common and well distributed away from houses.

There appears to be a definite local winter movement out of the district, though some birds stay all the year round. This movement seems common to all the Buntings at Harrow. My brother believes that there was a slight decrease in 1930, as compared with 1928 and 1929.

CIRL BUNTING. *Emberiza cirlus* L.

Nested at Harrow in 1927 and 1928. Several other records.

A pair nested close to the South Harrow Sewage Farm in 1927, and I saw the eggs after they had been taken by a Harrow boy. In 1928 the pair re-appeared, and I observed the birds on many occasions, and found the nest. Unfortunately, other Harrow boys knew of the nest, and the clutch was reduced first to two, and then to none.

After such treatment, it is hardly surprising that the birds have not re-appeared.

G.H.R. says that he has identified several round Southall, but has no dates or details. One was seen and heard near New Edgware on October 6th, 1930 (E.H.W.).

E.H.W. also observed a male at Elstree throughout November, 1923. Though this record falls outside my time (1925-30), I include it here as the status of the Cirl Bunting is of special interest. Between 1919 and 1925 several independent observers at Harrow noted the species, and in an inter-leaved copy of Barrett Hamilton's *Harrow Birds* in the Vaughan Library (Harrow), nests are reported by two reliable observers, D. C. Bulloch and A. C. C. Seligmann, in 1919 and 1924.

Reed Bunting. *Emberiza s. schoeniclus* (L.).

Locally common as a summer visitor; very irregular and scarce in winter, but winter status appears to be changing.

This species nests at suitable localities, as at the "open field" sewage farms, and the larger lakes with reedy edges. But many localities occupied prior to 1925 are now deserted, and pairs no longer frequent the smaller ponds and streams. This decrease may be partly due to pollution and housing, but I think that there has been a decrease irrespective of these factors. However, at Southall it seems to have but recently become firmly established (G.H.R.).

In 1929 there were eight nests at the South Harrow Sewage Farm, one of which contained the remarkable clutch of ten eggs (*cf. B.B.*, xxiii, p. 129).

The Reed Bunting obeys the local rule for all Buntings, by deserting the district in winter, though in the last two years one or two birds have stayed behind. The first flocks are formed in the last week of July (15 together on July 25th), and by the end of September over a hundred may be seen together! In the first week of October these leave. Prior to 1929 I had not seen a Reed Bunting here in winter, apart from a single bird at Harrow on December 3rd, 1928. In 1929 two or three were present at the South Harrow Sewage Farm throughout December, and I saw two at Ruislip on December 5th. In 1930 a single bird wintered at South Harrow. The return of summer migrants begins in the last week of February (earliest dates February 23rd, 1929, and February 28th, 1930). In the first three or four days of March a number of males take up their "territory," the number of such birds increasing slightly up to the middle of the month. Many of the females do not appear until the end of March.

Thus at Harrow the Reed Bunting behaves as a true summer migrant. It is interesting to note that Eliot Howard's observations (see *Introduction to Study of Bird Behaviour*, pp. 1-16) made in a district where the Reed Bunting is apparently more or less resident, show that the birds he has observed take up territory, and arrive at each subsequent "phase" about a week or ten days before the birds I have observed.

Wood-Lark. *Lullula a. arborea* (L.).

Has almost certainly nested on at least two occasions on Stanmore Common, and has certainly tried to do so more often. None since 1928.

The history of the species in the district is of great interest, and is, moreover, most puzzling. Its arrival, after many years' absence, at Stanmore Common in 1924 corresponded with its sudden increase in north-west Surrey and Windsor Park. (See *L.N.*, 1927, p. 19; *B.B.*, xviii, p. 192, etc.) In 1924 a single bird was seen by T.B.A., E.H.W., W.S.T., H.C. and others. In 1925 E.H.W.

noted two pairs, and thought that they were breeding. In 1926 a pair again appeared, but did not stay.

In 1927 it was not seen on Stanmore Common, but was noted by E.H.W. at Mill Hill in March and by me near Harrow in May.

In 1928 T.B.A. again saw a pair on Stanmore Common and H.C. observed them in mid-May. The birds apparently shifted to another part of the Common, where I found the nest with four eggs and identified the adults on May 22nd. G.M.S. has seen the bird on Ruislip Common, but it has never bred. Unfortunately W.S.T. is, at the time of writing, very ill and unable to supply me with details which he has for Stanmore.

In 1929 and 1930 none was recorded and it seems, therefore, that the Wood-Lark attempted tc colonise the district from 1924 to 1928 but failed to do so. It will be interesting to see if it reappears, for it is now firmly established in several localities less than 15 miles away.

Sky-Lark. *Alauda a. arvensis* L.

Common.

It clings to old nesting haunts for as long as possible, even when houses begin to appear around them. Many move to the sewage farms in winter.

Tree Pipit. *Anthus t. trivialis* (L.).

Fairly common, but rather local. Increasing in some areas.

Bushey Heath, Stanmore, Rayners Lane and Mill Hill are its chief breeding grounds. It continues to nest on old sites when they become entirely surrounded by houses. E.H.W. sees an early bird at Mill Hill in late March of almost every year. Several usually arrive in the third week of April. I have noted a very marked passage at the Brent in late April, and August to September, and this has been confirmed by E.H.W. and D. L. Lack.

Meadow Pipit. *Anthus pratensis* (L.).

Local, and nowhere very numerous in summer. Considerable numbers in winter.

Its chief breeding-places at present are at the sewage farms, and from November onwards large flocks occur on these. I have seen parties of over a hundred in February, which seems to be the optimum month. There also appears to be some September passage.

Yellow Wagtail. *Motacilla flava rayi* (Bp.).

Fairly common as a summer visitor, nesting on the sewage farms, reservoirs, golf courses and open fields throughout the district.

I have noted that few birds are more numerous on passage, and from the second week of April until early May and throughout August large numbers may be seen together. E.H.W., W.S.T., T.B.A., and G.H.R. all particularly note it as a very common passage bird.

GREY WAGTAIL. *Motacilla c. cinerea* (Tunst.).

A regular passage migrant, but scarce in winter; no nesting records.

E.H.W. and I have both arrived—quite independently—at the conclusion that the autumn passage from mid-September until November, and chiefly in late September and October, is on a much larger scale than the spring movement, which is often scarcely noticeable. We have both observed considerable numbers in autumn at the Brent and Elstree reservoirs and on all the sewage farms in the eastern part of the district, but we have never seen more than one or two in spring.

Occasional single birds occur in December, January and February, very irregularly, and I have a record for May 28th, 1928.

PIED WAGTAIL. *Motacilla alba yarrellii* Gould.

Well distributed throughout the district. Flocks in winter, when most move to the larger sewage farms.

I have seen over forty on one clinker bed, jumping the revolving arms of the filter sprays which come round every few seconds—a ludicrous spectacle.

WHITE WAGTAIL. *Motacilla alba alba* L.

No doubt a regular passage migrant.

I have identified this sub-species at Elstree Reservoir in September; T.B.A. finds it " fairly regular " there, and sees four or five every year, chiefly in April. At the Brent Reservoir I saw two on April 25th, 1929. On April 16th, 1929, W.S.T. and W. Kay Robinson saw one at the Brent (*B.B.*, xxiii, p. 22); and on September 16th (male) and 21st (pair), 1929, W.S.T. identified this race again at the Brent.

A more careful examination of Wagtails by other observers would no doubt produce many more records.

TREE CREEPER. *Certhia familiaris britannica* Ridgw.

Quite common in parkland and open woodland, even at Ealing. Favours elm trees round Harrow.

NUTHATCH. *Sitta europaea affinis* Blyth.

A rather irregular and uncommon breeder (though regular at Stanmore and round Bushey); fairly well distributed.

I have found this bird uncommon throughout the district, and have personally only found five nests. E.H.W. sends a most interesting note, confirming my packing theory (see introduction): " definite increase in all wooded districts, builders having caused congestion of pairs in ' saved districts ' in 1930."

I have observed nesting pairs at Stanmore (1926) and Pinner (1927): Perivale Wood (1929) and Harrow (1928, 1929 and 1930). Even in Barrett-Hamilton's time (1893) it was scarce (see *Harrow Birds*, p. 10). It seldom breeds regularly at any locality, and while in some years two or three pairs may appear in one area, in another year there may be none. At Harrow-on-the-Hill three pairs appeared in 1928 after three years' absence, and in 1930 there were four or more breeding (Duke of Grafton).

GREAT TIT. *Parus major newtoni* Prazak.

Common in all parts of the district throughout the year.

During 1927 I found four nests at the Harrow School Sanatorium within an area of 120 square yards. A pair has nested with great regularity in a letter box at Harrow since 1920, although they have never been known to rear any young there.

BLUE TIT. *Parus caeruleus obscurus* Prazak.

Very common, outnumbering the Great Tit.

COAL TIT. *Parus ater britannicus* Sharpe & Dress.

Fairly common and well distributed in all localities.

In one year a pair nested at Mill Hill Station, below the platform level, so that often the birds were prevented from entering or leaving the nest by the presence of trains (E.H.W.).

MARSH TIT. *Parus palustris dresseri* Stejn.

Scarce and local as a breeding species, but quite frequent in winter.

The only localities where it has bred with any regularity are at Stanmore and Ruislip, where I have noted it every summer.

The only other nesting places I know of are Perivale Wood, where a pair has nested on several occasions (W.M.W.), and Sudbury Convent.

I have noted a good number every winter, though I have not seen any flocks, either of this species alone, or mixed with other Tits.

LONG-TAILED TIT. *Aegithalos caudatus roseus* (Blyth).

Status varying very much locally. Generally distributed in winter.

I have never found a nest within 2 miles of Harrow nor heard of one in this part of the district for five years and am fairly sure that it has not nested between 1925 and 1930. But at Ruislip I have noted it as comparatively numerous, as have J.J.W., G.M.S., and P. W. Cheese. At Bushey Heath it is plentiful (T.B.A.), and at Stanmore a "sparse breeder" (E.H.W.); at Perivale Wood it is quite regular (W.M.W.), at Southall there has been a rapid recent increase (G.H.R.), and at Hendon and Mill Hill it is scarce (E.H.W. and W.S.T. and self). This distribution is rather surprising.

GOLDCREST. *Regulus regulus anglorum* Hart.

Nests very irregularly and is always scarce in summer. More often to be seen in winter especially in November and March.

It has only once nested at Harrow during the last five years, but one or two pairs usually nest at Harrow Weald and Mill Hill. The comparative absence of conifers no doubt accounts for the scarcity of this bird. The severe frosts of February 1929 seriously affected the already scanty population of the district (see *B.B.*, xxiii, p. 157; confirmed by E.H.W.).

RED-BACKED SHRIKE. *Lanius c. collurio* L.

A good number in the north, but scarce in the south-west, and very scarce in the south-east. While decreasing in some localities, it is definitely increasing in others.

The first Shrikes usually arrive about the first week of May.

Between 1925 and 1928 no pairs nested anywhere near Harrow-on-the-Hill, though breeding regularly at Ruislip, Bushey, Stanmore and elsewhere. In 1929 I knew of two nests near Harrow (one in an apple tree!), and in 1930 my brother knew of seven pairs. A similar though less rapid increase has been noted near Southall (G.H.R.). On the other hand, at Mill Hill E.H.W. notes a decrease, while within the last five or six years the species has entirely left Kingsbury, Kenton and Preston. A pair nested near Forty Lane, Wembley Park, in 1928—a very unexpected locality (T. H. Newman). I have found a Blackbird's nest within ten feet of a Shrike's, and G.H.R. observed a Greenfinch nesting three feet from a pair of Shrikes—in both cases with no evil consequences.

I have found young Blue Tits and Whitethroats (just able to fly) the commonest birds on the gibbets at Harrow. J. Buxton tells me that he found only bees (1929) at Ruislip. A Shrew was caught and impaled near Mill Hill in June (E.H.W.).

WAXWING. *Bombycilla garrulus* (L.).

Scarce and irregular visitor.

I have not myself observed this species in the district, but have received several records from other observers. Five were seen on Harrow Weald Common during November 1927 (T.B.A.). E.H.W. informs me that he notes it " in winter, but not every year," though he only gives one date (January 22nd, 1925, at Mill Hill). On April 9th, 1929, P. W. Cheese observed two close to Ruislip Reservoir (see *B.B.*, xxiii, p. 61), and G.M.S. confirmed this record and sent it to me. W.M.W. includes the Waxwing in a list of " occasional visitors " to Hanwell, but gives no details.

SPOTTED FLYCATCHER. *Muscicapa s. striata* (Pall.).

A numerous summer visitor arriving about the second week of May.

It is perhaps the most abundant summer migrant though challenged for this position by the Common Whitethroat. In 1928 I found eleven nests actually on Harrow Hill, and in 1929 I knew of sixteen pairs in the immediate vicinity. In 1928 there was a nest lined with oily rags used for rifle cleaning close to the Shooting Range at Harrow.

CHIFFCHAFF. *Phylloscopus c. collybita* (Vieill.).

Quite common at most suitable localities.

It usually arrives before the other migrant warblers, often occurring in late March, and always before the second week of April. Passage is marked at the Brent.

South of Harrow it nests in a fair number of localities, and does not seem a great deal troubled by houses. To the north it is quite numerous, though at Bushey Heath it is noted as unexpectedly scarce by T.B.A.

During the summer of 1930 two pairs were on Harrow Hill, one male singing constantly in a garden in the High Street (W.R.D.H.).

Willow Warbler. *Phylloscopus t. trochilus* L.

Common; more numerous than the Chiffchaff.

It is especially plentiful round Bushey Heath and Stanmore, and usually arrives early in the first week of April. During 1930 there was a very marked increase at Harrow, and in one small area where there were four pairs in 1929, there were between twelve and fifteen in 1930 (W.R.D.H.).

The latest dates I have are October 2nd, 1928 (at Harrow), and November 3rd, 1929 (at Bushey Heath, T.B.A.).

Wood Warbler. *Phylloscopus s. sibilatrix* (Bechst.).

Nests very locally, and scarce as a passage bird; arrives at end of April or early May.

A good many pairs breed regularly at Ruislip, but recent housing development in one part of Copse Wood threatens the favourite haunt of the species.

At Stanmore Common I have seen a few birds, and it is noted there in summer by H.C., and as breeding sparsely but regularly by E.H.W. In 1929 there was a general increase, and pairs appeared at several new localities, including Horsendon Hill, Harrow Weald and Mill Hill. In 1930 numbers were still well above normal, and there was a big increase near Stanmore. The only passage data I have are sent by G.M.S., who notes single birds in gardens at Northwood in April and May.

Within the last two years pairs have appeared in small copses which would appear most unsuitable for a bird which " breeds in woods with undergrowth of bracken and brambles " and is " essentially a woodland species, affecting especially woods of beech and oak " (quotations from H. F. Witherby, *A Practical Handbook of British Birds*, i, pp. 310-311). This must be another effect of housebuilding, and the semi-destruction of areas such as "Oxhey Woods."

Grasshopper Warbler. *Locustella n. naevia* (Bodd.).

Probably regular on passage at Brent Reservoir. May have nested.

The only one of my correspondents who mentions it is W.S.T., who occasionally sees it on passage at the Brent, and gives a late date when several were seen—September 21st, 1929. I have twice seen single birds at the Brent, both in the fourth week of April (1927 and 1928). The mass of weeds on the edge of this reservoir affords splendid shelter for these birds, but unfortunately makes them most difficult to identify.

R. W. Hale records one at Stanmore Common on April 28th, 1928 (*L.N.*, 1928, p. 76), and L. Parmenter saw one at the same locality during 1929 on May 28th and June 8th (*L.N.*, 1929, p. 100). This is a likely nesting locality.

REED WARBLER. *Acrocephalus s. scirpaceus* (Herm.).

Very local and scarce. Decreased.

In 1929 only three localities were occupied—Brockley Hill Lake, Southall Mill Pond and Elstree Reservoir (two pairs). In 1930 a pair nested at Southall (G.H.R.), but Elstree and Brockley Hill were almost certainly deserted. In 1927 three localities additional to the above were frequented—Pinner, South Harrow Sewage Farm and Ruislip Reservoir.

There has thus clearly been a decrease within recent years.

I have no dates of arrival or departure.

SEDGE WARBLER. *Acrocephalus schoenobaenus* (L.).

Fairly numerous in a few localities. Much passage.

Several pairs nest on the larger sewage farms, and suitable lakes. A few usually arrive in April at the Brent, but at Ruislip, G.M.S. gives the date of arrival as May 8th.

There is a very marked passage migration at the Brent, and at times (especially in early May) Sedge Warblers are really abundant there. I saw a very late straggler at Harrow on October 1st, 1929.

GARDEN WARBLER. *Sylvia borin* (Bodd.).

Locally common, and increasing in some parts of the district.

Though shy and skulking by nature, this bird returns to old nesting haunts year after year, though they may be surrounded by houses (as at Hanwell). Its chief haunts lie between Harrow Weald and Elstree. I have observed a marked increase at Harrow during 1929 and 1930, and this is confirmed by E.H.W. at Mill Hill. G.H.R. has not found it nesting at Southall, though he has noted individuals. I have no notes on migration at all, and it is one of the few summer visitors which does not occur regularly on passage at the sewage farms and reservoirs. It seems to arrive fairly regularly near the end of April.

BLACKCAP. *Sylvia a. atricapilla* (L.).

Regular summer visitor, nesting in suitable localities throughout the district, with the exception of the Ealing, Hanwell and Southall areas where it is scarce.

E.H.W. observes that the Blackcap is increasing and that it was espeeially plentiful in 1930; I have observed a notable increase in the immediate vicinity of Harrow Hill, which is confirmed by my brother. It sometimes arrives here at the beginning of April, though seldom seen in numbers before the third week of that month, when there is a good deal of passage through the eastern half of the district.

WHITETHROAT. *Sylvia c. communis* Lath.

Common all over the district, even at Hanwell and Southall.

The main passage movement occurs during the third week of April.

LESSER WHITETHROAT. *Sylvia c. curruca* (L.).

Fairly well distributed generally, but rather uncommon.

In most years I expect to find about one nest of Lesser Whitethroat to four nests of Common Whitethroat, and this ratio holds for most of the districts.

However, at Bushey Heath, T.B.A. finds it "very common," and at Southall G.H.R. considers it scarce.

On the whole it tends to arrive at Harrow a day or two before the Common Whitethroat; there is little or no definite passage of birds moving through the district.

FIELDFARE. *Turdus pilaris* L.

Regular winter visitor, occurring in small parties all over the district.

It is usually less numerous than the Redwing, but numbers vary considerably from year to year. Fieldfares arrive remarkably late in the district, and often the first do not appear until late November. I have not observed them later than March 12th, and they usually leave before the Redwing.

MISTLE-THRUSH. *Turdus v. viscivorus* L.

Well distributed, but nowhere very numerous.

I have observed no migration of any kind in this district.

SONG THRUSH. *Turdus philomelus clarkei* Hart.

Common.

During the period October 20th to November 20th, 1929, I saw only two birds of this species at Harrow (*L.N.*, 1929, p. 100, *cf.* Blackbird).

There was a nest on the ground at the Park Lake, Harrow, in 1930.

REDWING. *Turdus musicus* L.

Regular winter visitor, arriving about mid-November.

It occurs especially round Northolt and Rayner's Lane, and usually outnumbers the Fieldfare and assembles in larger flocks.

During February 1929 there were very large numbers. Some usually stay until the last week of March.

BLACKBIRD. *Turdus m. merula* L.

Abundant.

In 1926, and again in 1927, a Blackbird's nest at the Park Lake (Harrow-on-the-Hill) contained a Cuckoo's egg.

I have seen three pied specimens in the last five years, and in November 1928 an entirely white specimen was seen by M. Cox at the Wealdstone Sewage Farm.

Between 15th and 30th October 1929 I observed extraordinary numbers in the immediate vicinity of Harrow Hill and on several occasions saw 30-40 together (*L.N.*, 1929, p. 100); there had clearly been a very remarkable influx into the area. No repetition of this movement was observed in 1930. During 1929 my brother found a nest containing a young one quite three days old, and six addled eggs on which the hen was sitting (*B.B.*, xxiii, p. 129). In May 1930 my brother found a nest with six young and another with six eggs.

A Blackbird ringed as a nestling at Harrow on June 20th, 1929, by the writer was recovered close by on May 1st, 1930 (*B.B.*, xxiv, p. 182).

WHEATEAR. *Oenanthe oenanthe oenanthe* (L.).

Regular passage migrant, but usually scarce in the western half of the district. No proved cases of breeding.

There is often a very considerable passage of Wheatears at the Brent Reservoir, which is at its height in the latter half of April and in early September; single birds may be present until early October.

All the information at my disposal clearly shows that it is remarkably scarce in the western half of the district. I have never seen a migrant Wheatear at Harrow; G.M.S. notes a single bird in 1929, on April 30th, at Ruislip; T.B.A. says "very scarce" at Bushey; G.H.R. does not note it.

There is some possibility that the bird has recently bred in the district, for in 1926, and again in 1928, Wheatears were seen on and about Haste Hill during the summer. But available information seems to indicate that these were in reality either non-breeding birds or late stragglers (perhaps of the Greenland sub-species).

GREENLAND WHEATEAR. *Oenanthe oenanthe leucorrhoa* (Gm.).

Status uncertain. Probably a regular late passage migrant.

I have noted birds which I believe to have been of this race on two occasions at the Brent, on April 23rd, 1926, and May 20th, 1928. A. C. C. Seligmann states (*in litt.*) that he saw a small party in May 1925. My brother fully identified three on May 13th, 1930, at the South Harrow Sewage Farm (the only Wheatears which have been seen there in the last five years). E.H.W. informs me that he has kept a very careful look-out for this race, and states that he has observed it on four occasions in the eastern part of the district, namely, on July 9th, 1925; May 1st, 1927; September 2nd, 1928, and May 13th, 1929.

On the whole, with this weight of evidence, it seems more than likely that the Greenland Wheatear is regular on migration, passing through the district chiefly in May, after the main passage of the typical race. Autumn birds probably return south in September.

WHINCHAT. *Saxicola r. rubetra* (L.).

Regular summer visitor, nesting in considerable numbers at suitable places, but rather local.

The first arrivals are usually at Harrow about the end of the third week of April. D. L. Lack has noted autumn passage at the Brent from August 20th to September 14th (1929), while W.S.T. notes passage there in April, May and September. It is comparatively abundant as a nesting species round South Harrow on areas of rough unpastured land, and especially along the banks of the Metropolitan Railway line. I have seen three pairs nesting along a bank no more than one hundred and fifty yards long. Around Bushey, however, it appears to be scarce, and has only nested in

1925 and 1928 (T.B.A.). G.H.R. believes that it breeds at Southall, but has no direct evidence. Few birds are more tenacious, or continue to nest longer when their haunts are threatened by builders.

STONECHAT. *Saxicola torquata hibernans* (Hart.).

A scarce and very erratic breeder. Status at other seasons uncertain, but probably to some extent a passage migrant and summer visitor.

As the Stonechat is a very irregular and uncertain nesting species, I give below all available data for the period 1925-1930, without special comment.

There is generally a pair near Bushey Heath (T.B.A.). No nests were reported in 1925 or 1926; one nest at Pinner (F. Agabeg) and one at Harrow Weald (T.B.A.) in 1927; again at Pinner and Harrow Weald in 1928; one nest at Hendon in 1929 (E.H.W.), and another pair only prevented from breeding by a fire (W.S.T.); no nests reported in 1930. G.H.R. says " almost certainly nests " at Southall.

Apart from breeding records, I have the following notes: February 28th, 1926; February 1927 (H.C.); October 10th, 1928; March 1929 (Duke of Grafton); November 8th, 1929 (six birds together); March 9th, 1930 (W.R.D.H.); October 1st, 1930 (five birds together); several noted autumn-spring (E.H.W.); seen in autumn on the Grand Junction Canal (W.S.T.).

REDSTART. *Phoenicurus p. phoenicurus* (L.).

A scarce and very scattered nesting species which has almost certainly decreased recently. There is very little passage through the district. Usually it is observed here near the end of April.

This bird is even more erratic than the Stonechat. I have only found one nest since 1927 (at Uxendon Farm in 1928), although in 1926 I noted it as nesting occasionally. A pair bred on Stanmore Common in 1925 and again in 1927 (H.C.). T.B.A. finds it "scarce," but E.H.W. says that it is widely distributed, though not abundant, on parkland, and notes an increase in 1930. I noted a solitary Redstart on October 1st, 1928, near Wembley—a late date.

NIGHTINGALE. *Luscinia m. megarhyncha* Brehm.

A summer resident, well distributed except in the south. It has certainly increased steadily since 1925, reaching a peak in 1929.

Nightingales usually arrive about the third week of April, and continue to come in until early May.

Though there can be little doubt that this bird was decreasing up to about ten years ago, yet during the last five years it has returned to many long neglected haunts. In 1925 there was none round Harrow, nor had there been any for some years. Yet in 1926 a pair reappeared on the Hill itself, and in 1929 there were at least four pairs in the vicinity. I have found it nesting, often quite commonly, at Mill Hill, Elstree, Harrow Weald, Pinner, Ruislip, Ickenham, near Bushey, and round Stanmore (where it is more numerous than at any other locality).

It does not breed anywhere in the Ealing-Southall area at present (W.M.W., W.S.T. and G.H.R.), but has been noted on several occasions recently (G.H.R.). W. E. Glegg states (*L.N.*, 1929) that this is "an apparently decreasing species." I believe that on more careful investigation this statement will be found to be inapplicable to the Harrow district.

ROBIN. *Erithacus rubecula melophilus* Hart.

Common.

A number of variations have been reported to me, but none of these is of special interest.

I have found a nest at Harrow as early as March 3rd (1929).

On July 4th, 1930, my brother watched a Robin pursuing a Yellow Underwing Moth, which it finally killed, with great difficulty.

HEDGE SPARROW. *Prunella modularis occidentalis* (Hart.).

Common.

I have witnessed the curious "cloaca-pecking" courtship, recently the subject of a considerable correspondence in *British Birds* (vol. xxiii), on several occasions in spring at and around Harrow.

WREN. *Troglodytes t. troglodytes* (L.).

Common.

The earliest nest that I have found at Harrow was on March 15th (1930). I have on three occasions (two in 1929 and one in 1930) found dead Wrens in old or cock nests.

From June 24th to July 11th, 1929, an adult Wren was to be found at any hour of the day or night in a completed nest (at Harrow); on July 11th I very foolishly caught this bird and marked it with a Witherby ring, and it did not return.

SWALLOW. *Hirundo r. rustica* L.

Quite common.

My dates of arrival vary from April 10th to April 28th, and I have no notes of any passage later than the end of September (September 25th, 1929; September 29th, 1930). There seems to be a certain amount of east to west passage through the district in September, but my observations are incomplete on this point.

HOUSE MARTIN. *Delichon u. urbica* (L.).

Common, usually rather outnumbering the Swallow in the immediate vicinity of Harrow.

The Martins usually appear some days after the Swallows, April 20th-28th being the normal limits for the first birds. The autumn passage continues for a fortnight after the Swallow movements have more or less ceased, and there is usually a big rush of Martins at the very end of September, which subsides in a few days, scattered birds passing up to mid-October. All the autumn movements seem to be southwards, the birds going to the south-east, south-west or south; the greater part of the movement occurs in the central and eastern parts of the district.

It is very interesting that E.H.W. (*in litt.*) says "on passage at the Brent and Elstree, rarely elsewhere." This entirely confirms my views set forward tentatively in the introductory section on migration.

SAND MARTIN. *Riparia r. riparia* (L.).

Comparatively uncommon as a migrant, not known to breed.

The Sand Martin is never numerous on passage in the district, and is far outnumbered by Swallow, House Martin, and Swift. One or two birds appear before mid-April in most years, and during the last ten days of April there is a fairly considerable passage at the Brent and Elstree reservoirs. The autumn passage appears to be more or less confined to the last half of September, though I have obtained very little data on the matter.

I have been unable to find any occupied nesting site in the district, and none is known to my correspondents.

SWIFT. *Apus a. apus* (L.).

Quite common, and probably increasing as a nesting species.

The first birds of the year seldom appear before the end of April, and in the western part of the district are seldom noted until the end of the first week in May. But in 1929 W.S.T. obtained an unusually early record at the Brent, April 15th.

There is a very considerable return passage in July and August, and I have noted a big "rush passage" from June 19th to 21st, apparently of birds going north to breed.

The erection of palatial cinemas and public halls, which is increasing apace round Harrow, has enabled many pairs to breed on sites which were (for them) previously unattractive.

NIGHTJAR. *Caprimulgus e. europaeus* L.

Nests annually at a few localities. Signs of a slight tendency to increase.

I have very little information as to arrival dates, the only two I have being May 11th and May 23rd.

Every year several pairs nest at Ruislip, Northwood, Harrow Weald, and Stanmore Common. In 1929 I estimated, from personal observations and data supplied by other observers, that there were 16-20 pairs nesting in the district; this may have been an under-estimate. During 1930 birds were observed in several unexpected localities, including Hale Lane, on May 11th (Leigh Robinson), and Mill Hill on May 12th (E.H.W.). Moreover a pair nested actually on Harrow Hill for the first time since 1918 (when B. W. Tucker informs me that he observed a pair nesting).

G.H.R. has not seen a Nightjar for several years, though not long ago it nested regularly. This decrease, however, is no doubt directly due to building round Southall.

A considerable number of Nightjars (about six a year) are killed by a keeper near Ruislip, who thinks that they do damage to his pheasants.

A bird, without any date, is labelled "Harrow Line," and included in a case of birds killed on the Metropolitan Railway, which is placed in Charing Cross underground station (P.A.D. Hollom).

KINGFISHER. *Alcedo atthis ispida* L.

Very uncommon and irregular as a nesting species, but a frequent visitor to all lakes and streams.

I have only two definite records of nests from 1925 to 1930—at Ruislip (1925) and at Elstree (1925, E.P.T.). No doubt pairs occasionally nest elsewhere, but at the present time there is no haunt where a pair breeds regularly. Throughout the summer of 1930 Kingfishers were seen on the Park Lake, Harrow, but they were not known to nest in the vicinity.

From August to December individuals appear on most of the lakes, ponds, and streams of the district. It is curious that I have only one record for January, none for February, and one for March. Further observations may show that the species is as common in these months as in the others, but, if not, its status must be rather unusual.

GREEN WOODPECKER. *Picus viridis virescens* (Brehm).

Common. Possibly decreasing.

I have obtained comparatively little accurate first hand observation as to the annual numbers of this species. But during the period 1925-1930 I have gained the impression—it is nothing more—that the Green Woodpecker is very gradually decreasing, at least close to Harrow-on-the-Hill. This may not be the case, and I have no proof. It does, however, seem possible that the marked recent increase of the Starling, and the high percentage of holes in trees occupied by Starlings, may be affecting this Woodpecker. It would be less likely to affect the Spotted Woodpeckers, because the nest holes of these are not sufficiently large for the comfortable occupation of a pair of Starlings.

At Ruislip Woods, where I have noted no decrease or signs of decrease, and where the species is abundant, there are no nesting Starlings. (*Cf.* Great Spotted Woodpecker.)

GREAT SPOTTED WOODPECKER. *Dryobates major anglicus* (Hart.).

Unevenly distributed as regards numbers, but nowhere scarce.

Every correspondent of mine notes this bird as quite common, with the exception of W.S.T. (who omits it from his Willesden list) and G.H.R. (who says "irregular visitor" for Southall).

Around Harrow-on-the-Hill it has increased by about 30 per cent. in the last three years, and at Horsendon Hill, Perivale, and Hanwell I have found it (1930) the commonest Woodpecker. At Ruislip, however, I have found it far outnumbered by the Green. The only record I have for the Brent Reservoir is for December 1st. 1929 (D. L. Lack). I have observed a marked preference for birch trees (where available) as nesting sites in the district.

The well-known "drumming" commences regularly during the last week of March, and for the five years of my observations I have first heard the sound between the 24th and the 27th of the month. It is interesting to note that this species was apparently extinct at Harrow in 1903, but entirely re-established by 1918 (B. W. Tucker *in litt.*).

LESSER SPOTTED WOODPECKER. *Dryobates minor comminutus* (Hart.).

Local, but nests in a good many places. Owing to its shy and secretive habits, it is difficult to work out the local distribution of this bird.

In my limited experience I have found it regular at Harrow Weald, Stanmore, Elstree (Brockley Hill), Ruislip, Sudbury, and Perivale. It certainly nested at Southall in 1927, and probably other years since (G.H.R.), while even at Willesden a pair was observed every year until 1927 (T. H. Newman). Nests have been found at the Park, Harrow, in 1925 (A. W. P. Robertson), 1928 (G. K. Marriott), 1929, and 1930.

W. E. Glegg (*L.N.* 1929) notes "probable decrease." I should be inclined to suggest "probable increase."

WRYNECK. *Jynx t. torquilla* L.

Scarce, and has undoubtedly decreased very considerably.

One or two birds may be noted near the end of April, but there is now no regular spring influx into the district.

I have not myself seen a Wryneck here since 1927, when a pair nested and reared young at the Park. It has entirely deserted Ruislip, Northwood (G.M.S.), and Pinner (F. Agabeg). T.B.A. found a nest in California Lane in 1925, but none since. At Mill Hill it was quite common up to 1926, but has disappeared now (E.H.W.). It is not mentioned by G.H.R., W.S.T., or W.M.W., and is presumably absent from their areas.

CUCKOO. *Cuculus c. canorus* L.

Common, usually arriving close to and just after 15th April.

I have, during the last five years, seen or been shown fifteen Cuckoo's eggs, in the nests of eight species, as follows:—Chaffinch (2), Pied Wagtail (3), Meadow Pipit (1), Red-backed Shrike (1), Willow Warbler (3), Blackbird (2), Robin (1), and Hedge Sparrow (1). This is a remarkable list, for it shows an almost complete lack of stability in host species selected, no doubt largely due to the scarcity of the favourite host—the Meadow Pipit. The two cases of Cuckoos in Blackbirds' nests are very unusual; these were in 1928 and 1929, both at Sudbury, but the two eggs were clearly the product of different parents.

In June, 1929, my brother and I observed a case of double fostering of a young Cuckoo, which was in a Robins' nest. The Robins were assisted in their arduous task by a female House Sparrow. There are only three previous records of double fostering, all observed by J. H. Owen at Felsted, Essex (see *Reports of Felsted School Scientific Society* and *B.B.*).

LITTLE OWL. *Athene noctua vidalii* A. E. Brehm.

Common. Probably numbers now at a maximum.

I have found this the commonest Owl in the district, as have all my correspondents. The first actual nest record I have is for 1920 (3 pairs), though it probably nested some years earlier, and by 1925 the species was quite numerous. The maximum seems to have been reached in 1928, and numbers are now more or less stationary.

At Ruislip, D.K. has found it destructive to pheasant and partridge chicks. In 1928, N. R. Grimston kept two young birds, taken from a nest near Harrow. These thrived in captivity, but had the unpleasant habit of throwing up their food when handled.

LONG-EARED OWL. *Asio o. otus* (L.).

Probably at least one pair breeds every year.

During 1924 a bird was seen at Bushey Heath by T.B.A., and in 1925 a nest was found (*Trans. Herts. N.H.S.*, xvii, p. 165). A nest was reported from the same locality in 1928, by two Harrow boys, but the evidence was not conclusive.

E.H.W. has no less than eleven records of the species at and around Mill Hill, and during 1929 a pair was seen and heard there from May onwards, and almost certainly bred.

I believe that a few night walks around Ruislip, Bushey, Stanmore, and Mill Hill would produce a number of records of this species.

W. E. Glegg (*L.N.* 1929) has no record since 1871.

E.H.W. tells me that he has definitely proved breeding just east of the district, at Highwood Hill.

TAWNY OWL. *Strix aluco sylvatica* Shaw.

Quite common.

Two were killed on the electric railway at South Harrow on March 31st, 1925, and are now preserved in Charing Cross Underground Station (P. A. D. Hollom).

During November, 1925, a Tawny Owl spent a fortnight in the Harrow School Chapel, sleeping throughout the services on a crossbeam, and proving a great distraction. It was finally expelled, with much difficulty.

BARN OWL. *Tyto a. alba* (Scop.).

Fairly common, but decreasing.

The destruction of old farm-houses and sheds to make room for semi-detached villas is affecting the status of the Barn Owl, and will probably exterminate it in some parts within the next five years. It is now (1930) considerably less common than either the Little or the Tawny. It is seldom killed by the keepers at Ruislip, who find that it does them little damage.

PEREGRINE FALCON. *Falco p. peregrinus* Tunst.

Probably regular passage migrant.

I have the following records for the district:—March 1925, Bushey Heath (T.B.A., *Trans. Herts. N.H.S.*, xvii, p. 165). February 1927, Harrow (A. Vassall); this bird killed a Starling in the garden of Elmfield. March 13th, 1929, Harrow-on-the-Hill; I watched this bird soaring upwards in spirals, while drifting westwards with a moderate wind (*L.N.* 1929, p. 100). September 7th, 1930, Bushey Heath (T.B.A.).

From the above records, it would appear likely that this is a regular passage migrant in early spring and (to a lesser extent) in autumn. This is confirmed by other records for the London area (see *B.B.*, xiii, p. 31; xv, p. 270; xix, p. 211. *L.N.* 1928, p. 48).

KESTREL. *Falco t. tinnunculus* L.

Quite common.

I have noted no change in status between 1925 and 1930.

SPARROW-HAWK. *Accipiter n. nisus* (L.).

Rather uncommon, and has decreased.

I have noted very few around Harrow since 1927, and there has been a decrease since 1925. T.B.A. has not seen a nest at Bushey Heath since 1925, and at Southall it has not been seen for some years (G.H.R.).

HERON. *Ardea c. cinerea* L.

Common visitor; does not nest.

It may be observed at all times of year, but is especially numerous in autumn, when I have seen ten together at the Brent.

There are no heronries within the district, the nearest being at Black Park (Langley), Wanstead Park, Richmond Park, and Burwood Park (Hersham).

MUTE SWAN. *Cygnus olor* (Gm.).

Nests at Ruislip, Elstree, Southall, and elsewhere.

Visits the Brent occasionally.

MALLARD. *Anas p. platyrhyncha* L.

Quite common, nesting on the reservoirs, lakes, and sewage farms.

Four pure black (melanistic) Mallard were reared by wild parents on Elstree Reservoir in the summer of 1928, and were seen in January 1929 by L. Parmenter.

A dark female, not entirely black, was present at Elstree in the autumn of 1929. In 1929 a pair was nesting in an enlarged rabbit burrow at Ruislip Reservoir.

TEAL. *Anas c. crecca* L.

Regular visitor from autumn to spring; never numerous.

One or two usually stay at Elstree until April, and a pair was present throughout the summer of 1930.

It is seldom that more than five or six Teal are present. Individuals occur on the Canal, Southall Mill Pond, Harrow Weald. Park Lake, Hanger Hill, Ealing Reservoir, and South Harrow Sewage Farm.

WIGEON. *Anas penelope* L.

Regular winter visitor to the reservoirs, but seldom more than four birds together.

There seems to be a definite flight line for Wigeon from Elstree over Stanmore Common and Bushey Heath, for flocks have been noted flying over by T.B.A. and H.C. on several occasions This may be a route between Elstree and Ruislip Reservoirs, but it has not been noted with any other species of duck, and is therefore probably used only by this species.

SHOVELER. *Spatula clypeata* (L.).

One or two noted each winter.

Single birds have been noted at Elstree by E.H.W. and myself in November, December, and January. The only Brent record is for January 17th, 1926 (E.H.W.), and the only one for Ruislip, March 23rd, 1925 (G.M.S. and *L.N.*, 1929, p. 100). It seems possible that if undisturbed this bird would breed in the district.

POCHARD. *Nyroca f. ferina* (L.).

Winter visitor from late October until March, when there is a marked passage. A few stay until April.

During the winter there are usually some at Elstree and Ruislip Reservoirs, but seldom more than 20 birds at each. The Brent Reservoir is, however, for some unknown reason, their favourite haunt. The largest November number noted at the Brent is 65 (November 10th, 1927, C. Oldham). In December, I have seen up to 170 (December 23rd, 1929), but in January and February flocks of over 50 are unusual, though on February 11th, 1926, J. P. Hardiman saw 150 (*L.N.* 1926, p. 54). In March, a very noticeable passage occurs, which is most marked in the middle of the month, flocks of 150 being quite frequent at this time, though numbers vary very much from day to day. The latest date I have is April 21st, 1930, at the Brent (D. L. Lack).

On January 1st, 1928, a male hit a wireless aerial on top of Harrow-on-the-Hill, and was found early in the morning walking along the pavement outside the School Chapel. I kept the bird for two days in a bath, until it had recovered, and then liberated it. G.H.R. has noted this species once on Southall Mill Pond.

TUFTED DUCK. *Nyroca fuligula* (L.).

Winter visitor, never very numerous. Probably has attempted to nest and may succeed shortly. A few appear in late autumn; numbers increase in late December, and decrease again in mid-March; some stay well into April.

This species especially favours the Elstree Reservoir, where it is nearly always more numerous than at Ruislip or the Brent. The largest numbers I personally have seen were at Elstree, 65 and 55 on December 23rd and 30th, 1929, respectively; at Ruislip, 48 on December 30th, 1929; and at the Brent, 13 on March 22nd, 1929. Its local preference for reservoirs thus differs considerably from that of the Pochard.

I have seen individuals and pairs at Elstree in early May, and E.H.W. and I both consider that the bird would breed there if allowed to do so. For the Brent, the latest date I have is April 21st (1930) (D. L. Lack). A few may be seen during the winter months on the Hanger Hill Reservoir, and the Mill Pond at Southall.

SCAUP. *Nyroca m. marila* (L.).

Irregular visitor.

On April 3rd, 1930, while with D. L. Lack, I saw an adult male in full plumage on the Brent Reservoir. On December 11th, 1926, a pair was observed on Elstree Reservoir (E.H.W.). On December 2nd, 1925, one was recorded from the Brent (J. P. Hardiman, *L.N.* 1925, p. 33).

I have only these three records, but include the species because within recent years it has shown a tendency to become a more or less regular visitor to the reservoirs of the London area, and more regular observation would no doubt show that it is an annual visitor to this district.

GOLDENEYE. *Bucephala c. clangula* (L.).

Irregular and uncommon winter visitor.

At the Brent, single birds, usually females or immature males, appear in January and February, and W.S.T. notes one on April 25th, 1928.

I have no records from Ruislip or Elstree, which is surprising, and the three observers who have watched these reservoirs (E.P.T., E.H.W., and G.M.S.) have no records.

During January 1929 a female was present on the small reservoir on Hanger Hill (Ealing), and G.H.R. observed a pair on Southall Mill Pond in November 1928.

COMMON SCOTER. *Oidemia n. nigra* (L.).

Probably scarce, but regular, spring passage migrant.

On May 7th, 1929, L. Parmenter identified a male at Elstree Reservoir (*L.N.* 1929, p. 98).

On March 3rd, 1930, D. L. Lack and I watched another male feeding at the Brent.

Though I have no other records, I believe that regular observations will prove that this is a regular spring passage migrant through the district, as has been shown by the observations of C. Oldham at Tring, and various observers in the London area.

I should like to take this opportunity of correcting an erroneous record of my own in *The Field* for November 15th, 1928. This record ("Common Scoter in Herts") refers to the black Mallard present on the reservoir at that time.

GOOSANDER. *Mergus m. merganser* L.

Uncommon winter visitor, but appears to be becoming more regular. Noted from all three reservoirs.

Prior to 1927 there were no records for the district, and the first was reported from Elstree in February 1927 (E.H.W.).

None was noted in 1928, but in January 1929 a pair appeared on Ruislip Reservoir, and from February 1st to February 25th a female was present, these birds being seen by G.M.S., L. Parmenter, and myself. Also in January 1929 a female frequented the Brent, and on February 9th one was present on Elstree Reservoir.

SMEW. *Mergus albellus* L.

Uncommon visitor, probably becoming more regular.

As with the Goosander, there were no records prior to 1927, except for a single bird at Ruislip in January 1909.

In 1928 two females (or juveniles) were present from February 4th until the end of the month, and were seen by G.M.S. and myself.

During January 1929 three females or juveniles were again at Ruislip (G.M.S.), and at the same time there was a single bird at the Brent. There are no Elstree records.

Regular observation at any of the three reservoirs would no doubt produce a number of further records.

GREAT CRESTED GREBE. *Podiceps c. cristatus* (L.).

Nests regularly at Ruislip and Elstree. A few visit the reservoirs in winter, and there is a marked spring passage.

At Elstree two to three pairs have bred for the last twenty-five years with little or no fluctuation in numbers, there usually being three pairs (E.P.T., J. White, T. L. Sanderson, and myself). It is very seldom that more than one pair rears young—chiefly owing to the depredations of "trippers" and Carrion Crows. Usually one or two birds stay the winter (E.H.W.).

At Ruislip there has been an increase, from two or more pairs in 1908 (C. Oldham), to eight pairs in 1930 (A. Harding and myself). There appears to be a considerable amount of annual fluctuation, for there were two pairs in 1920, seven in 1928, and six in 1929 (Major E. E. Austen and H. S. Button). Most of the breeding birds return in early March, and are paired by early April.

The length of the nesting season is remarkable at Ruislip, probably owing to serious nest robbing by Harrow boys and "trippers." Thus, in 1928, I saw three pairs sitting in mid-August (see also D. L. Lack, *B.B.*, xxii, p. 145), while in 1929 I found a nest with one egg on March 22nd—a remarkable date.

No Great Crested Grebe nest at the Brent, for that water is quite unsuitable. The main spring passage occurs from mid-March to the end of April on all three reservoirs (H.C., W.S.T., C. Weeks).

LITTLE GREBE. *Podiceps r. ruficollis* (Pall.).

Quite common, nesting on suitable lakes and present all the year round.

On March 10th, 1927, E.H.W. picked up one in the street near Colindale Station.

RING DOVE. *Columba p. palumbus* L.

Common and has increased, having previously decreased and then successfully readjusted itself to new conditions.

In December 1927 I found a Ring Dove choked and killed by an acorn which had stuck in its throat. In autumn on Harrow Weald large numbers occur, though I have not seen any flock numbering over two hundred birds.

STOCK DOVE. *Columba oenas* L.

Fairly well distributed, but not common in the north. Scarce and almost absent in the south.

It is curious that this species should have left many old haunts—for it was apparently fairly common south of Harrow some years ago—while the Ring Dove has increased generally. This is probably due in part to the removal of many old trees (as a result of house building) and to unsuccessful competition with the Ring Dove.

TURTLE DOVE. *Streptopelia t. turtur* (L.).

Common summer resident which has increased during the last five years.

Normally the first individuals arrive between March 3rd and 9th.

My correspondents note it as common, and suggest an increase, and E.H.W. adds, "increasing but not abundant yet (except in 1928)."

RINGED PLOVER. *Charadrius h. hiaticula* L.

Regular autumn passage migrant.

I have no records for Ruislip, which is further confirmation of my theory concerning passage migration (see Section IV.), but it is regular from August to October at the Brent and Elstree (*cf.* Dunlin and Common Sandpiper). It is curious that there is only one spring record (in May) at the Brent (L. Parmenter). This is probably explained by the fact that in spring the water level is seldom low enough to expose any mud, so that the birds do not halt at the reservoirs.

GOLDEN PLOVER. *Charadrius apricarius* L.

Winter visitor, rather irregular and uncommon.

Small flocks may be seen in most winters near Elstree (T.B.A. and self), but it is scarce elsewhere. G.M.S. says "rare at Ruislip;" E.H.W. gives two dates, December 11th, 1927, and February 7th, 1929, though indicating that he has seen the species on several other occasions; and it is included in a list of birds occasionally seen around Perivale Wood (W.M.W.). An immature bird was seen at the Brent on August 18th, 1929, by L. Parmenter (*L.N.* 1929, p. 102).

LAPWING. *Vanellus vanellus* (L.).

As a nesting species, rather uncommon north of Harrow, and very scarce to the south.

W.M.W., W.S.T., and G.H.R. agree with me that the Lapwing very seldom nests in the southern part of the district. Around Harrow flocks normally break up in the second week of March.

DUNLIN. *Calidris alpina* (L.).

Autumn and winter visitor. Only one spring record.

This species has not been recorded from Ruislip (*cf.* Ringed Plover and Common Sandpiper), but has been noted annually at the Brent and Elstree from August (once) until December (E.H.W., D. L. Lack, T.B.A., and myself), and passing over Mill Hill and Harrow in late September and early October (E.H.W.). There is a May record from the Brent (*L.N.* 1929, p. 102).

COMMON SANDPIPER. *Tringa hypoleucos* L.

Passage migrant.

This bird usually arrives about the end of April, and the spring passage continues until mid-May. In autumn, there appears to be considerably less passage than in spring, as has been noted by E.H.W. and myself.

It is interesting that W.S.T. says " regular passage migrant " for the Brent, while G.M.S. says " rather irregular " at Ruislip (*cf.* Ringed Plover and Dunlin).

E.H.W. has heard the species passing over Mill Hill by night, and has a record for July 13th (1927).

GREEN SANDPIPER. *Tringa ochropus* L.

Passage migrant, probably regular.

I have the following records:—September 18th, 1928, Elstree Reservoir (T.B.A.); March 27th, 1929, Brent Reservoir (self, *L.N.* 1929, p. 102); August 28th (five) and 29th (three), 1929, South Harrow Sewage Farm (J. P. Hardiman and self, *loc. cit.*); September 20th-21st, 1929, Brent (W.S.T.).

It is of very considerable interest that this is the only species of passage migrant wader which has been observed on the South Harrow Sewage Farm during five years' regular observation.

REDSHANK. *Tringa t. totanus* (L.).

Summer visitor and nesting species. Passing migrant. No winter records.

This species now breeds annually on the South Harrow Sewage Farm. It apparently colonised the locality about 1921 (D. C. Bulloch); in 1928 there were four pairs (*L.N.* 1928, p. 78); and in 1929 five pairs, though in 1930 only two pairs appeared to be breeding. In 1929 a pair nested at the head of Elstree Reservoir, but I saw none there during 1930.

Redshanks leave their nesting grounds in the district in autumn, and are entirely absent all the winter, re-appearing (at South Harrow) with considerable regularity about March 9th or 10th.

Passage birds may be seen at the Brent and elsewhere; E.H.W. has two records of birds heard passing over Mill Hill at night, on March 7th and July 22nd (flock), 1925; and over Harrow, April 1926.

GREENSHANK. *Tringa neularia* (Gunn.).

Probably fairly regular on passage, but very little information.

Though I have not seen this bird in the area, and there are only two records for the period, 1925-30, I suspect that regular observation would show it to be more frequent both in autumn and spring. Three were seen at the Brent on September 5th, 1926 (*L.N.* 1926, p. 54), and eleven at the same locality on September 2nd, 1928 (*B.B.*, xxii, p. 168).

CURLEW. *Numenius a. arquata* (L.).

Regular autumn passage migrant. Irregular in spring and winter.

My correspondents, apart from G.H.R., note this species as heard at night every autumn (especially in late August) at Elstree, Mill Hill, etc., passage occurring largely in late July and August. T.B.A. has also seen birds in daylight at Elstree.

It is not so frequent in spring, and I have only one winter record: February 7th, 1929, on a field near Hendon (E.H.W.). On August 31st, 1928, E.H.W. heard a party flying *northwards* over Mill Hill. This is an unusual direction for the time of year, and very interesting.

COMMON SNIPE. *Capella g. gallinago* (L.).

Common winter visitor. Some pairs stay to breed.

Every year one or two pairs nest at the South Harrow Sewage Farm, though in 1930 only one pair was present and was not known to breed. Two or three were first suspected of nesting here in 1918, by B. W. Tucker.

A pair almost certainly nested at the head of Ruislip Reservoir in 1928, and in 1928 and 1929 at least one pair bred on the Edgware Sewage Farm.

In winter, when Snipe may occur by any brook or pond in the district, I have seen as many as 150 on the South Harrow Sewage Farm (February 28th, 1930), and over 100 on several occasions from mid-December until the end of February. In March I have seen up to 75, but in October and November seldom seen more than fifteen.

E.H.W. has heard Snipe passing over Mill Hill by night.

JACK SNIPE. *Lymnocryptes minimus* (Brünn).

Regular winter visitor, in small numbers; also in late autumn and early spring.

I have personal records for the sewage farms from October 3rd to March 27th, a considerable range of dates for this species. On one occasion (February 22nd, 1929) I flushed four at South Harrow, all along a strip of 35 yards.

T.B.A. has flushed single birds at Stanmore Common, Hartsbourne Manor, and Harrow Weald (October 9th, 1930). One was noted at the Brent on January 8th, 1925, by J. P. Hardiman (*L.N.* 1925, p. 34). I flushed one from a small pond near Sudbury Court on December 12th, 1928 (*L.N.* 1928, p. 78).

WOODCOCK. *Scolopax r. rusticola* L.

A passage migrant. Probably nests annually at Ruislip.

There can be no doubt that this bird nests more or less regularly in the Copse Wood, Ruislip, for H. S. Button and D.K. both report it as nesting there, and J.J.W. "finds a nest in most years," though none in 1929 (when D.K. reported a nest with 5 eggs, 4 of which hatched). D.K. also informs me that some five years ago he shot an adult carrying a downy chick. I have myself seen Woodcock on several occasions in summer, but unfortunately my visits have been so irregular and hurried that I have not been able to find a nest. There are no other records of nesting or suspected nesting for Middlesex.

From mid-October until mid-March individuals may occasionally be met with round Ruislip, Stanmore, Harrow Weald, and elsewhere, though the majority appear to be autumn passage migrants going through in the last week of October and the first half of November.

On November 11th, 1929, B. H. Wormald flushed one on the Harrow School Football Fields. Throughout February 1929, too, a single bird fed daily on the lawn of a garden at Northwood (G.M.S.). A party of six paid a visit lasting some days to Dormer's Wells, Southall, in winter 1926-7 (G.H.R.).

COMMON TERN. *Sterna h. hirundo* L.

Probably regular on passage, but very little positive data.

The only records I have received are from Elstree Reservoir, where E.P.T. reports a few during early May and September in most years, but, unfortunately, gives no dates. On October 13th, 1928, at Elstree—a very unusual date—I obtained my only personal record for the district.

G.M.S. has never seen a Tern at Ruislip, while E.H.W., W.S.T. and D. L. Lack have no records for the Brent, though W.S.T. has recorded the Black Tern (*Chlidonias n. niger* (L.)) from this locality (*B.B.*, xxii, p. 69). Despite the remarkable scarcity of records, it seems unlikely that this is not a regular passage migrant, as it has been shown to be regular along the course of the Thames, at Tring in Hertfordshire, at Cambridge and elsewhere.

However, it is possible that the migratory route of Tern differs entirely from that of waders and gulls. More careful observation in the district should throw light on this point. It is perhaps significant that during the period 1923-1927, in C. Oldham's annual bird reports for Hertfordshire, there are thirteen records of Black Tern and only five of Common Tern (see *Trans. Herts. N.H.S.*).

BLACK-HEADED GULL. *Larus r. ridibundus* L.

Regular and often numerous winter visitor, a few staying all the year round.

For four years I kept regular notes of the times and directions of flight of this Gull at Harrow. The results have proved remarkably and unexpectedly chaotic, and movements even at dusk appear to be more or less irregular. On the whole it seems probable that at least a considerable part of the Harrow Gulls join the enormous flocks which roost at the Littleton Reservoir, twelve miles from Harrow-on-the-Hill, though on a number of occasions I have observed flocks moving northwards in the late afternoon, and there is clearly some passage migration north and south through the district.

A Black-headed Gull ringed at Makläppen, Sweden, on June 18th, 1926, was recovered at Park Royal on October 30th, 1926.

Common Gull. *Larus c. canus* L.

Winter visitor; not numerous.

As with the Black-headed Gull, my observations on flight lines at Harrow have proved singularly unproductive, the subject being much complicated by genuine passage migration. In hard weather, as in January and February 1929, large flocks may occur, and even in normal conditions I have seen flocks of over eighty. The ratio of juveniles to adults at Harrow in winter seems to be about four to ten, and the ratio of Common to Black-headed Gulls about one to ten.

Herring Gull. *Larus a. argentatus* Pont.

Rather irregular winter visitor.

I have thirty to forty records of birds flying over Harrow, between 1925 and 1930. During the cold spell early in 1929 unusual numbers were present round Harrow and Bushey. T.B.A. and G.H.R. observe it fairly regularly; E.H.W. only sends five records, including an interesting note of twelve birds at Elstree apparently migrating northwards on December 27th, 1927.

Lesser Black-backed Gull. *Larus fuscus graellsii* Brehm.

Regular passage migrant in the extreme east of the district. Rare elsewhere.

The only mention made of this Gull by any observer in any part of the district other than the extreme east is by W.M.W., who includes it in a list of birds occasionally seen near Perivale, but gives no details. T.B.A., G.M.S., J.J.W., and G.H.R. have never seen any in their respective areas, all of which lie in the western half of the district. E.H.W. and I have found it to be a scarce but regular passage migrant in small numbers, near Hendon and Mill Hill. From the end of March until June we have seen occasional birds going more or less due north, and in August and September a return passage southward takes place. The observations of D. L. Lack and the Cambridge Bird Club at Cambridge (*B.B.*, xxiv, p. 148, and *Rep. Cambridge Bird Club* 1930) and C. Oldham at Tring confirm this inland passage, while J. P. Hardiman (*L.N.* 1927) describes a marked autumn passage (August and September) on the Thames at Barnes.

The Scandinavian race (*Larus fuscus fuscus* L.) has not yet been identified in this district.

GREAT BLACK-BACKED GULL. *Larus marinus* L.

Scarce visitor.

During the cold spell early in 1929, single birds were noted by T.B.A. and myself at Bushey, Elstree, and Sudbury.

LAND-RAIL. *Crex crex* (L.).

Now locally extinct. Present, and probably breeding, up to 1928.

There can be little doubt that a few years ago the Land-Rail bred near Ruislip, Edgware, and Elstree. Since 1925 the gradual decrease, in progress since about 1915, had been accelerated, and by 1929 the bird had left the district altogether.

I heard the familiar note on several occasions in 1925, and again in 1926, in some fields near Northolt; none returned in 1927, nor have they re-appeared since.

Near Northwood there has been a rapid decrease, and though somo were present in 1928, there was none in 1929 (G.M.S.). At Ruislip two or three were seen in 1928, but none since then (J.J.W.). For Mill Hill, E.H.W. wrote in 1928, "sparse summer migrant, probably breeds;" in 1930 he informed me that he had no subsequent records.

It is curious that in the collected observations of the London Natural History Society there are no records of nesting after 1908 (*L.N.* 1928, p. 59).

WATER-RAIL. *Rallus a. aquaticus* L.

Scarce visitor, apparently irregular.

On several occasions during winter (1925-6, 1928-9) I have seen and heard this species on the South Harrow Sewage Farm, and during 1926 at least one stayed until the end of April. On one occasion I stood on a tussock near the centre of the farm for five minutes, while attempting to see a Water-Rail which I had heard calling in the vicinity; I was not unnaturally surprised when the bird in question finally crept out of a tussock less than a yard away.

MOOR-HEN. *Gallinula c. chloropus* (L.).

Common.

COOT. *Fulica a. atra* L.

Common on suitable waters.

PHEASANT. *Phasianus colchicus* L.

Resident.

In Ruislip Woods this bird is preserved for shooting purposes. Elsewhere in the northern part of the district it is rather sparsely distributed; for instance, round Harrow two pairs nest every year with great regularity at the Sewage Farm, and nowhere else.

PARTRIDGE. *Perdix p. perdix* (L.).

Fairly well distributed, but is being considerably affected by housing.

French Partridge. *Alectoris r. rufa* (L.).

Nests more or less regularly at Ruislip.

H. S. Button, J.J.W., D.K., and I have noted it as nesting between Ruislip and Harefield, though there are apparently not more than two pairs in any one year. The only brood of young I have seen (July 1927) was with only one parent, which is interesting in view of the fact that there is a good deal of evidence to show that the male and female of this species incubate separate clutches, each rearing their own brood (see M. Portal, *B.B.*, xvii, p. 315; J. M. Dewar, *B.B.*, xviii, p. 62; and Rev. F. C. R. Jourdain, *B.B.*, xxiv, p. 144).

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Ornithological Records of the London Area, 1930.

BIRDS OBSERVED WITHIN TWENTY MILES OF ST PAUL'S CATHEDRAL.

THE increase of reports sent in is very encouraging. Those portions of our area which are in Hertfordshire and Kent have not received enough attention. The following lists include only the more interesting records, but all received have been filed. The following table gives the results to 31st December 1930 for each division :—

No. of Division	1	2	3	4	5	6	7	8	9	10	11	12
No. of Species Recorded ...	73	92	146	131	90	151	108	144	128	86	96	93
No. of Species rec. Nesting	13	58	32	82	35	69	44	58	79	50	50	30
No. of Division	13	14	15	16	17	18	19	20	21	22	23	24
No. of Species Recorded ...	124	147	93	111	104	86	92	79	65	55	61	66
No. of Species rec. Nesting	68	60	37	29	43	42	35	22	13	15	6	7

This makes a total of 197 species (92 of them nesting) north of the Thames; and 177 species (92 nesting) south of the Thames.

All records are for 1930 except where otherwise stated.

Contributors of two or more notes are indicated by initials :—

S. Austin	S.A.	D. L. Lack	D.L.L.
Miss J. Baggallay	J.B.	Dr H. L. Lack	H.L.L.
H. Bentham, per L. Parmenter	H.B.	H. A. Littlejohn	H.A.L.
C. L. Collenette	C.L.C.	Miss C. E. Longfield	C.E.L.
J. E. S. Dallas	J.E.S.D.	Dr G. Carmichael Low	G.C.L.
L. M. Emberson	L.M.E.	A. Holte Macpherson	A.H.M.
F. R. Finch	F.R.F.	E. Mann	E.M.
J. P. Hardiman	J.P.H.	L. Parmenter	L.P.
T. H. Harrisson	T.H.H.	R. W. Pethen	R.W.P.
P. D. Hayward, per S. Austin	P.D.H.	R. W. Robbins	R.W.R.
P. A. D. Hollom	P.A.D.H.	C. Weeks	C.W.
G. Hopkins	G.H.	*British Birds* magazine	*B.B.*
E. L. King	E.L.K.		

ARRIVAL OF MIGRANTS, 1930.

The order is that of the earliest recorded date for each species. The table gives only the earliest date for each county. Counties are indicated by their initial letter:—B.=Bucks, E.=Essex, H.=Herts, K.=Kent, M.=Middlesex, S.=Surrey.

WHINCHAT.

Mar. 9—S. Addington. H. E. Pounds, *B.B.*, xxiii, p. 206.
April 27—E. South Chingford. E.M.

COMMON REDSHANK.

Mar. 9—M. Harrow. T.H.H.
,, 23—K. Dartford Marshes. L.P.
,, 30—H. St Albans. C.W.
,, 30—S. Beddington. L.P.

WHEATEAR.

Mar. 22—S. Barn Elms Res. L.M.E., G.C.L., C.W.
,, 30—H. St Albans. C.W.
April 8—E. Walthamstow Res. J.P.H.

CHIFFCHAFF.

Mar. 23—S. Bookham Common and Fetcham Common. P.A.D.H.
,, 30—H. St Albans. C.W.
April 2—E. Epping Forest. P.D.H.

SAND MARTIN.

Mar. 29—S. Barn Elms Res. D.L.L., A.H.M.
,, 29—S. Richmond Park. C.W.
April 14—M. Brent Res. D.L.L.

REDSTART.

Mar. 30—H. St Albans. C.W.
April 2—S. Wimbledon Common. J.B.
,, 7—E. Epping Forest. P.D.H.

WILLOW WARBLER.

April 1—S. Barn Elms Res. J.P.H.
,, 6—M. Regents Park. D.L.L.
,, 7—E. Epping Forest. P.D.H.

TREE PIPIT.

April 2—E. Epping Forest. P.D.H.
,, 5—S. Tadworth. H.B.

RING OUZEL.

April 2—S. Wimbledon Common. J.B.

WRYNECK.

April 2—S. Tadworth. H.B.

YELLOW WAGTAIL.

April 4—S. Barn Elms Res. D.L.L.
,, 8—E. Walthamstow Res. J.P.H.
,, 9—M. Brent Res. D.L.L.

COMMON SANDPIPER.

April 8—S. Molesey. T.H.H.
May 14—E. Walthamstow Res. R.W.P.

BLACKCAP.

April 9—E. Loughton. P.D.H.
,, 13—S. Near Dorking. T.H.H.
,, 13—S. Old Malden. L.M.E.
,, 19—H. Broxbourne. S.A.

COMMON TERN.

April 9—M. Kensington Gardens. G.C.L.

MARTIN.

April 12—S. Barn Elms Res. C.W.
,, 27—E. South Chingford. E.M.
May 3—M. Stanmore. L.P.

WHITETHROAT.

April 13—S. Stoke D'Abernon. L.M.E.
,, 25—E. Loughton. P.D.H.

SWALLOW.

April 13—S. Near Dorking. T.H.H.
,, 14—M. Brent Res. D.L.L.
,, 17—E. Loughton. P.D.H.

CUCKOO.

April 16—S. Addlestone. T.H.H.
,, 24—E. Epping Forest. P.D.H.

WHITE WAGTAIL.

April 22—S. Barn Elms Res. A.H.M.

NIGHTINGALE.

April 24—E. Loughton. P.D.H.
,, 25—S. Limpsfield. R.W.R.
May 10—M. Stanwell. S.A.

LESSER WHITETHROAT.

April 25—E. Loughton. P.D.H.
,, 27—S. Coulsdon and Godstone. L.P.
,, 27—S. Tadworth. H.B.
May 3—M. Stanmore. L.P.

SWIFT.

April 26—S. Barn Elms Res. C.W.
May 5—E. Loughton. P.D.H.

WOOD WARBLER.

April 27—S. Farthing Downs. L.P.
,, 30—E. Epping Forest. P.D.H.

GRASSHOPPER WARBLER.

April 27—S. Epsom Common. L.M.E.

SEDGE WARBLER.

April 27—S. Godstone. L.P.
May 3—M. Elstree Res. L.P.
,, 11—E. South Chingford. E.M.

GARDEN WARBLER.

April 28—E. Epping Forest. P.D.H.

BLACK TERN.

April 30—S. Barn Elms Res. E.L.K.

PIED FLYCATCHER.

May 2—M. Stamford Hill. S.A.

TURTLE DOVE.

May 4—S. Chipstead. C.W.

RED-BACKED SHRIKE.

May 5—E. Epping Forest. P.D.H.
,, 8—S. Kingswood. H.B.

GARGANEY.

May 6—S. Barn Elms Res. A.H.M.

SPOTTED FLYCATCHER.

May 16—E. Epping Forest. P.D.H.
,, 24—S. West Barnes. L.M.E.

GREENLAND WHEATEAR.

May 16—S. Barn Elms Res. J.P.H.

BLACK-HEADED GULL.

(First Juvenile.)

July 10—S. Barn Elms Res. A.H.M.

COMMON GULL.

July 12—S. Barn Elms Res. L.P.

SCAUP-DUCK.

Sept. 24—S. Barn Elms Res. J.P.H.

REDWING.

Oct. 8—B. Fulmer. C.L.C., C.E.L.
,, 12—E. Epping Forest. C.W.
Nov. 15—S. Beddington. L.P.

SISKIN.

Oct. 5—S. Tadworth. H.B.

BRAMBLING.

Oct. 10—S. Tadworth. H.B.

HERRING GULL.

Oct. 23—S. Barn Elms Res. J.P.H.
,, 26—K. Dartford. L.P.

GOLDENEYE.

Oct. 28—S. Barn Elms Res. J.P.H.
Nov. 8—M. Staines Res. A.H.M.

WIGEON.

Nov. 8—M. Staines Res. A.H.M.
,, 8—S. Barn Elms Res. L.P.

GOOSANDER.

Nov. 8—M. Staines Res. A.H.M.
Dec. 4—S. Molesey Res. E.L.K.

FIELDFARE.

Nov. 16—H. Micklefield Green. D. H. Clanchy.
,, 23—E. Walthamstow Res. R.W.P.
,, 23—S. Beddington. L.P.
,, 30—M. Staines. A.H.M.

SMEW.

Dec. 4—S. Molesey Res. E.L.K.

PINTAIL.

Dec. 7—S. Richmond Park. L.M.E., J.E.S.D.
,, 20—M. Staines Res. F.R.F., A.H.M.

NEW SPECIES.

Four species of birds new to the Society's list (composed of members' notes and notes published in *British Birds*) make the total number 208.

MIDDLESEX.

SNOW-BUNTING. *Plectrophenax n. nivalis* (L.). Five on 20th November 1929, at Staines Reservoir (*1st Ann. Rep. Eton College N.H.S.*, 1929-30, p. 36; also quoted in *B.B.*, xxiv, p. 232).

SPOTTED REDSHANK. *Tringa erythropus* (Pall.). An immature bird on 23rd September 1928, at Staines (F.R.F.; see also *Field* for 1st November 1928).

SURREY.

YELLOW-BROWED WARBLER. *Phylloscopus humei praemium* Math. and Ired. One on 10th October at Sutton (F. W. Frohawk, *B.B.*, xxiv, p. 159).

Manx Shearwater. *Puffinus p. puffinus* (Brünn.). One was picked up alive in Netherby Road, Honor Oak, on 23rd September, but died during the night (Norman E. Winch, per J.E.S.D.).

NEW BREEDING SPECIES.

Two species of birds not previously recorded in the Society's list as breeding make the total 98.

SURREY.

Grasshopper-Warbler. *Locustella n. naevia* (Bodd.). Bookham Common, nest found on 7th June (H.B.).

Teal. *Anas c. crecca* L. A pair nested and reared one young in the Society's area (P.A.D.H.).

INTERESTING RECORDS.

BUCKINGHAMSHIRE.

Shoveler. *Spatula clypeata* (L.). Black Park Lake, two on 2nd October (C.L.C. and C.E.L.).

Goosander. *Mergus m. merganser* L. Langley, a young male shot on 6th December (G.C.L., in *B.B.*, xxiv, p. 221).

ESSEX.

Carrion-Crow. *Corvus corone corone* L. A flock of 84 counted at Walthamstow Reservoirs on 4th January is the largest number recorded here (R.W.P.).

Reed-Warbler. *Acrocephalus s. scirpaceus* (Herm.). Status maintained at Walthamstow Reservoirs (J.P.H.).

British Song-Thrush. *Turdus philomelus clarkei* Hart. An adult ringed at Woodford Green on 27th February 1929 was recovered where ringed on 6th March 1929 and 30th March 1930 (*B.B.*, xxiv, p. 183).

Blackbird. *Turdus m. merula* L. Four adults ringed at Woodford Green on 3rd March, 15th June, 21st June, and 13th July 1929 were recovered where ringed on 18th April, 23rd March, 11th May, and 30th March 1930 respectively (*B.B.*, xxiv, p. 184).

Common Heron. *Ardea c. cinerea* L. Thirty-six nests on twenty-two trees at Wanstead Park on 4th May (W. H. Feakes, per H.A.L.). Thirty-four birds were seen at Walthamstow Reservoirs on 1st March, and again on 15th June (R.W.P.).

Shoveler. *Spatula clypeata* (L.). Walthamstow Reservoirs, one on 29th December (F.R.F. and J.P.H.).

Scaup-Duck. *Nyroca m. marila* (L.). Walthamstow Reservoirs, a male on 29th December (J.P.H.).

Goldeneye. *Bucephala c. clangula* (L.). King George V. Reservoir, Chingford, a male on 13th December (J.P.H.).

Goosander. *Mergus m. merganser* L. King George V. Reservoir, Chingford, two on 5th March (J.P.H.).

Black-throated Diver. *Colymbus a. arcticus* L. Walthamstow Reservoirs, one on 29th December (F.R.F. and J.P.H.).

Red-throated Diver. *Colymbus stellatus* Pontopp. Wanstead Park, one from 12th February to 7th March (H.A.L. in *B.B.*, xxiii, p. 341).

Golden Plover. *Charadrius apricarius* L. King George V. Reservoir, Chingford, 100 on 8th December and 60 on 13th December (J.P.H.). Nazeingwood Common, a flock on 21st December (G.H.).

Dunlin. *Calidris alpina* (L.). King George V. Reservoir, Chingford, one on 15th August (J.P.H.).

KENT.

Starling. *Sturnus v. vulgaris* L. An adult ringed at Beckenham on 17th February 1929 was recovered at Trzebiechowo, Poland, about October 1929 (*B.B.*, xxiii, p. 293).

Siskin. *Carduelis spinus* (L.). Four near Brasted on 14th December (L.P.).

Common Buzzard. *Buteo b. buteo* (L.). One over Dartford Heath on 22nd February and two at Wilmington on 26th February (F. Howard Lancum, *B.B.*, xxiii, p. 312).

Great Black-backed Gull. *Larus marinus* L. Over twelve on the Thames and the mud between Dartford marshes and Northfleet on 26th October (L.P.).

Land-Rail. *Crex crex* (L.). Heard at Westerham on 20th July (E.L.K.).

MIDDLESEX.

Records of birds seen at King George V. Reservoir, Chingford, and Walthamstow Reservoirs are dealt with under Essex.

Hooded Crow. *Corvus cornix cornix* L. Hampton Court Park, one on 18th October (F.R.F.).

Siskin. *Carduelis spinus* (L.). Kempton Park Reservoirs, five on 9th March (J.P.H.).

Corn-Bunting. *Emberiza c. calandra* L. Three at South Harrow sewage farm on 22nd February. Nested near South Harrow but the nest was robbed (T.H.H.). Seven, three singing, near Staines Reservoirs on 10th August (L.P.).

White Wagtail. *Motacilla a. alba* L. One on the causeway of Staines Reservoirs on 4th May 1929 (F.R.F.). Staines Reservoirs, an adult male on 26th August 1930 (D.L.L.).

British Willow-Titmouse. *Parus atricapillus kleinschmidti* Hellm. One in North Middlesex on 7th May 1929, and one on 3rd May 1930 (L.P.).

Pied Flycatcher. *Muscicapa h. hypoleuca* (Pall.). A male at Stamford Hill on 2nd May (S.A. in *B.B.*, xxiv, p. 28).

Blackbird. *Turdus m. merula* L. A young bird ringed at Harrow on 20th June 1929 was recovered where ringed on 1st May 1930 (*B.B.*, xxiv, p. 182).

SHELD-DUCK. *Tadorna tadorna* (L.). Staines Reservoirs, four on 1st December 1929 and one on 2nd January 1930 (F.R.F.). Littleton Reservoir, an adult was found dead on 18th January (T.H.H.).

PINTAIL. *Anas acuta acuta* L. Ruislip, a male on 8th March (T.H.H.). Staines Reservoirs, a female on 1st January, a male on 5th and 11th January, a pair on 9th February, a male and two females on 20th December, and a male on 21st December (A.H.M., T.H.H., and others).

SHOVELER. *Spatula clypeata* (L.). Ruislip, seven, four being males, on 7th April. Littleton Reservoir, up to four were present all the winter, 1929-30; thirteen, including eight males, on 13th April; and five males, one female, on 4th May (T.H.H.). At Staines Reservoirs on 1st and 22nd January, pair on 1st February, one on 15th February, a pair on 15th March and on 9th September (L.M.E., J.P.H., and T.H.H.).

SCAUP-DUCK. *Nyroca m. marila* (L.). Staines Reservoirs, a male on 2nd March (L.M.E.). Brent Reservoir, a male on 7th April (D.L.L. and T.H.H.).

COMMON SCOTER. *Oidemia n. nigra* (L.). Staines Reservoirs, a pair on 29th March (F.R.F.) and two males and one female on 3rd May (G.C.L.). Regents Park, a male from 6th to 8th April (D.L.L.). Brent Reservoir, a male on 7th April (D.L.L. and T.H.H.).

GOOSANDER. *Mergus m. merganser* L. Kempton Park Reservoirs, three on 2nd March and two on 9th March (J.P.H.).

SMEW. *Mergus albellus* L. Largest number counted was at Stoke Newington Reservoirs, 17, 8 being adult males, on 27th February (C.W.) and at Hampton Reservoirs, 17, including 8 adult males, on 22nd February (L.M.E.).

CORMORANT. *Phalacrocorax c. carbo* (L.). Staines Reservoirs, one, bearing a ring on its leg, on 10th August (H.A.L. and L.P.). One was recovered at Staines Reservoirs on 23rd August, which had been ringed at Rhossilli, Glamorgan, on 14th June 1930 (*B.B.*, xxiv, p. 188).

SLAVONIAN GREBE. *Podiceps auritus* (L.). Staines Reservoirs, four on 30th November, three on 6th December, two from 7th to 20th December, one from 21st to 31st December (A.H.M., J.P.H., and others).

RED-NECKED GREBE. *Podiceps g. griseigena* (Bodd.). Staines Reservoirs, one on 13th and 15th July, and one on 8th August (D. Gunn, per H.A.L.), one on 30th November and 6th and 7th December (A.H.M. and others).

BLACK-NECKED GREBE. *Podiceps n. nigricollis* Brehm. Staines Reservoirs, three on 17th May (E.L.K.), one on 3rd and 8th August (D. Gunn, per H.A.L.) and on 10th August (H.A.L., L.P.), and one on 8th November (A.H.M.).

GREAT NORTHERN DIVER. *Colymbus immer* Brünn. Staines Reservoirs, two on 29th and 30th November, one on 2nd and 6th December, two on 7th to 31st December (A.H.M., J.P.H. and others). " One of the two birds seen on 29th and 30th November retained a certain amount of its summer plumage on the back, and this bird was not seen again after 30th November. So three visited the reservoirs " (A.H.M.).

Black-throated Diver. *Colymbus a. arcticus* L. Staines Reservoirs, one on 13th to 31st December (L.M.E., A.H.M. and others).

Oyster-catcher. *Haematopus o. ostralegus* L. Four, flying from Barn Elms Reservoirs, Surrey, passed over Chiswick on 30th August (L.P.).

Ringed Plover. *Charadrius h. hiaticula* L. Staines Reservoirs, one on 10th August (H.A.L.).

Grey Plover. *Squatarola s. squatarola* (L.). One flew over Staines Reservoirs on 20th December (E.L.K. and A.H.M.).

Dunlin. *Calidris alpina* (L.). Littleton Reservoirs, three on 4th May (T.H.H.), Staines Reservoirs, two on 5th July (A.H.M.) and Brent Reservoir, one on 10th August (J.P.H.).

Green Sandpiper. *Tringa ochropus* L. Four at Harrow sewage farm on 10th August (J.P.H.). One, flying from Barn Elms Reservoir, Surrey, passed over the Hammersmith side of the Thames on 30th August (L.P.).

Common Redshank. *Tringa totanus totanus* (L.). Nested at South Harrow sewage farm (T.H.H.).

Greenshank. *Tringa nebularia* (Gunn.). Staines Reservoirs, one stayed a few minutes on 9th September (T.H.H.).

Grey Phalarope. *Phalaropus fulicarius* (L.). One at Staines Reservoirs during a fierce westerly gale on 19th August (H.L.L.).

Common Curlew. *Numenius a. arquata* (L.). One flew over Staines Reservoirs on 16th November (A.H.M. and G.C.L.).

Jack Snipe. *Lymnocryptes minimus* (Brünn.). Up to four were present during the winter, 1929-1930, at South Harrow sewage farm, one stayed until 17th March (T.H.H.).

Common Tern. *Sterna h. hirundo* L. A Tern present from 9th to 12th April at the Round Pond, Kensington Gardens (G.C.L.), was identified as this species on 11th April by T.H.H. Staines Reservoirs, one on 10th August (H.A.L.).

Scandinavian Lesser Black-backed Gull. *Larus f. fuscus* L. "On 18th January 1930, I observed three Lesser Black-backed Gulls on Littleton Reservoir. These birds were at first on the causeway, within forty yards of a single Greater Black-backed Gull, and in close proximity to a number of Coots. I was thus able to obtain good colour comparisons and to see that the mantle of these birds was as dark as that of the Greater Black-backed Gull and of the same quality as the Coots. On flushing the birds this was confirmed, for the mantle and wings then appeared a uniform black. I am well acquainted with the Scandinavian race (*Larus f. fuscus*) in Norway and with the British race at all seasons. I therefore have no hesitation in attributing these three birds to the Scandinavian sub-species." (T. H. Harrisson.)

Lesser Black-backed Gull. *Larus fuscus* L. ? sub-species. Staines Reservoirs, three immature on 25th June (D.L.L.).

Great Black-backed Gull. *Larus marinus* L. At Battersea Bridge on 30th December 1927 and 1st January 1928 (F.R.F.). At Littleton Reservoir on 18th January 1930 (T.H.H.). Two adults on the mud at Hammersmith flew off down river on 13th December (L.P.).

KITTIWAKE GULL. *Rissa t. tridactyla* (L.). An adult which had been dead several days was found at Littleton Reservoir on 18th January (D.L.L. and T.H.H. in *B.B.*, xxiii, p. 275).

GUILLEMOT. *Uria aalge* (Pontopp.) ? sub-species. Two seen on the Thames just above London Bridge on 7th November (P. H. Trahair Hartley, *B.B.*, xxiv, p. 197).

WATER-RAIL. *Rallus a. aquaticus* L. One at Enfield on 30th January 1904 (R. B. Lodge, per H.A.L.).

SURREY.

SISKIN. *Carduelis spinus* (L.). Tadworth, a flock of 10 on 4th April, two on 5th October, and seen twice again during the autumn (H.B.). By the canal at Addlestone on 26th December (H.G. and W. B. Alexander, per T.H.H.).

COMMON CROSSBILL. *Loxia c. curvirostra* L. At one locality in north-west Surrey there were twenty, including a red male, on 21st April, and two on 28th April and at another locality, one on 18th June (T.H.H. and P.A.D.H. in *B.B.*, xxiv, p. 156). Addlestone, three on 20th July, fifteen flying westwards on 22nd July, and three, including two red males, on 26th July (P.A.D.H.). Kingswood, three or four on 10th August; Tadworth, about ten passed over on 12th August, one on 8th November (H.B.).

BRAMBLING. *Fringilla montifringilla* L. A flock of about three hundred alighted on some tall beech trees at Tadworth for about five minutes on 9th March and then all flew off north-eastwards. Up to this date they had been present in small numbers, twenty to thirty together at the most (H.B.).

CORN-BUNTING. *Emberiza c. calandra* L. A pair nested at Molesey (T.H.H.).

WOOD-LARK. *Lullula a. arborea* (L.). One near Addlestone on 15th March (T.H.H.). A pair near Selsdon on 20th April (L.P.).

SKY-LARK. *Alauda arvensis arvensis* L. A nest with four eggs found on Fetcham Downs on 27th July (a late date) (J.E.S.D.).

TREE-PIPIT. *Anthus t. trivialis* (L.). Tadworth, one on 24th September (a late date) (H.B.).

ROCK-PIPIT. *Anthus spinoletta petrosus* (Mont.). Molesey Reservoirs, one on 24th December (T.H.H.). Barn Elms Reservoirs, one on 28th December (H.L.L. and D.L.L.).

GREY WAGTAIL. *Motacilla c. cinerea* Tunst. Nested near Godstone and near Leatherhead (H.B.).

WHITE WAGTAIL. *Motacilla a. alba* L. Barn Elms Reservoirs, one in song on 22nd April (A.H.M.).

PIED FLYCATCHER. *Muscicapa h. hypoleuca* (Pall.). Wimbledon Woods, a female on 24th April 1926; Petersham Park, a male on 1st May 1927 (F.R.F.). Purley, a female on 30th August 1930 (G.H.).

GRASSHOPPER-WARBLER. *Locustella n. naevia* (Bodd.). Epsom Common, one on 27th April (L.M.E.).

WHITETHROAT. *Sylvia c. communis* Lath. A nestling ringed on 26th May 1923 at West Byfleet was recovered on 4th October 1929 at Sernache do Bonjardine, Portugal (*B.B.*, xxiii, p. 295).

RING-OUZEL. *Turdus torquatus torquatus* L. Wimbledon Common, one on 2nd April (J.B.). Walton Heath, one on 14th September (H.B.).

BLACKBIRD. *Turdus m. merula* L. A young bird ringed at Addlestone on 16th April 1929 was recovered there on 24th March 1930 (*B.B.*, xxiv, p. 184).

WHEATEAR. *Oenanthe o. oenanthe* (L.). Richmond Park, in the spring a male stayed as late as 26th May (J.P.H.). Purley, two pairs were about from 27th April until the third week in May (G.H.).

GREENLAND WHEATEAR. *Oenanthe oenanthe leucorrhoa* (Gm.). At Purley, north-east side of Riddlesdown, one on 25th August 1929 (G.H.). Barn Elms Reservoirs, a male on 16th May 1930 (J.P.H.). Epsom Downs, one on 27th September (H.B.).

NIGHTINGALE. *Lusciana m. megarhyncha* Brehm. A nestling ringed at Pyrford, Surrey, on 14th June 1926 was recovered at Leatherhead on 20th August 1929 (*B.B.*, xxiii, p. 296).

BRITISH ROBIN. *Erithacus rubecula melophilus* Hart. An adult ringed at Addlestone on 20th January 1928 was recovered where ringed on 16th August 1928 and 23rd January 1930 (*B.B.*, xxiii, p. 297).

NIGHTJAR. *Caprimulgus e. europaeus* L. At Bookham Common, Limpsfield and Oxshott in June (P. J. Hanson, R.W.R. and L.M.E.).

MERLIN. *Falco columbarius aesalon* Tunst. Tadworth, one on 27th August and on 12th October (H.B.).

COMMON HERON. *Ardea c. cinerea* L. Burwood Park, Hersham, 28 nests in 24 trees on 27th April; Gatton Park, Merstham, a nest with three young on 6th July (P.A.D.H.).

GARGANEY. *Anas querquedula* L. Barn Elms Reservoirs, a pair on 6th May (A.H.M.).

PINTAIL. *Anas acuta acuta* L. Richmond Park, a male on 7th December (J.E.S.D. and L.M.E.).

SHOVELER. *Spatula clypeata* (L.). Molesey Reservoirs, two males and two females on 16th January (T.H.H.). Near Beddington, a female on 6th April (L.P.).

COMMON POCHARD. *Nyroca f. ferina* (L.). Nested at Barn Elms Reservoirs, but the two ducklings disappeared (J.P.H.). Nested at Richmond Park, three young (J. Rudge Harding, per C.W.).

TUFTED DUCK. *Nyroca fuligula* (L.). Four pairs nested at Barn Elms Reservoirs (L.P.), three pairs near Beddington (L.P.), two pairs at Gatton Park (P.A.D.H.), two pairs at Molesey Reservoirs (T.H.H.), and one pair (of wild birds) at Kew Gardens (G.C.L.).

SCAUP-DUCK. *Nyroca m. marila* (L.). Barn Elms Reservoirs, a female stayed from November 1929 to 23rd February (L.M.E., C.W. and others), three on 13th January (T.H.H.) and the next day (J.P.H.) and a pair on 24th September (J.P.H.). Molesey Reservoirs, a male from 8th to 17th April (T.H.H.) and a female on 26th December (H.G. and W. B. Alexander, per T.H.H.).

GOLDENEYE. *Bucephala c. clangula* (L.). The maximum at Molesey Reservoirs was 17, including two adult males on 16th January (T.H.H.). The maximum at Barn Elms Reservoirs was two, in March and in

December (L.M.E. and L.P.). One at Beddington sewage farm on 23rd November (L.P.).

COMMON SCOTER. *Oidemia n. nigra* (L.). A pair at Lonsdale Road Reservoirs, Barnes, on 6th April (J.P.H.).

GOOSANDER. *Mergus merganser merganser* L. The maximum at Molesey Reservoirs was 52 on 12th January (A.H.M.). Barn Elms Reservoirs, two on 1st January (J.P.H.) and one adult male on 28th December (L.P.). Richmond Park, three on 16th February and four on 2nd March (C.W.), and two on 24th December (J.P.H.).

SMEW. *Mergus albellus* L. The maximum at Molesey Reservoirs was 24, including 10 adult males on 11th January (T.H.H.). The maximum at Barn Elms Reservoirs was 12, including 5 adult males on 1st March (A.H.M.). The maximum at Lonsdale Road Reservoirs, Barnes, was 8 on 8th February (C.W.).

CORMORANT. *Phalacrocorax c. carbo* (L.). Island Barn Reservoir, Molesey, one on 25th October (F.R.F. and J.P.H.). Molesey Reservoirs, one, trapped in conduit, on 24th December (T.H.H.).

GANNET. *Sula bassana* (L.). One was caught on the pond at Wandsworth Common towards end of May and sent to the Zoological Gardens on 29th May (D. Seth-Smith, per L.P.).

GREAT CRESTED GREBE. *Podiceps c. cristatus* (L.). At Barn Elms Reservoirs, from 52 on 4th January numbers rose to about 80 by 25th January and then decreased during February and March to none on 29th March. During April, May, June and July numbers varied from 4 to 8 until 26th July when about 20 were seen. Then came a gradual increase to the maximum of 111 on 2nd November followed by a decrease to 61 on 28th December (J.P.H., A.H.M. and other observers). A pair nested but the eggs were taken by Crows (J.P.H.). Molesey Reservoirs, 80 on 5th January, 10 on 8th June, 21 on 21st June and 106 on 3rd October (P.A.D.H. and E.L.K.). Beddington sewage farm, two on 18th April (on passage) (L.P.).

SLAVONIAN GREBE. *Podiceps auritus* (L.). Barn Elms Reservoirs, one from 15th February to 21st March (A.H.M., J.P.H., L.M.E. and D.L.L.).

BLACK-NECKED GREBE. *Podiceps n. nigricollis* Brehm. Molesey Reservoirs, one on 21st December (L.M.E.).

BLACK-THROATED DIVER. *Colymbus a. arcticus* L. Molesey Reservoirs, one stayed from 24th December until 18th January (H.B. in *B.B.*, xxiii, pp. 277-278).

WOOD-PIGEON. *Columba p. palumbus* L. " Immense numbers were seen near Leatherhead in mid-January, estimated at at least twelve thousand. Quite an exceptional and abnormal influx " (T.H.H.).

TURTLE-DOVE. *Streptopelia t. turtur* (L.). Beddington sewage farm, one on 5th October (a late date) (L.P.).

OYSTER-CATCHER. *Haematopus o. ostralegus* L. Four flew down and circled low over Barn Elms Reservoirs on 30th August, and finally flew off over Chiswick (L.P.).

RINGED PLOVER. *Charadrius h. hiaticula* L. Barn Elms Reservoirs, one on 7th March (J.P.H.), one on 22nd and 23rd August (Miss H. Watkins and C.W.) and one on 15th and 16th November (A.H.M. and J.P.H.).

Golden Plover. *Charadrius apricarius* L. Weybridge, one on 2nd January (T.H.H.).

Ruff. *Philomachus pugnax* (L.). Addlestone, a reeve on ploughland on 5th October (P.A.D.H.).

Dunlin. *Calidris alpina* (L.). Barn Elms Reservoirs, two on 26th April (C.W.), three on 27th April (A.H.M.), one on 13th July (G.C.L.), one on 20th July, two on 22nd July (J.P.H.), one on 31st July (A.H.M.), one on 27th and 30th September (L.P. and J.P.H), and two on 22nd November (E.L.K. and A.H.M.).

Little Stint. *Caludris minuta* (Leisl.). Barnes Reservoirs, one, apparently immature, on 30th September (F.R.F. in *B.B.*, xxiv, p. 166).

Common Sandpiper. *Tringa hypoleucos* L. Barn Elms Reservoirs, one stayed late and was last seen on 13th December (L.P.).

Green Sandpiper. *Tringa ochropus* L. Brooklands sewage farm, one on 7th July (P.A.D.H.). Barn Elms Reservoirs, one flew over circling and disappeared down river on 30th August. Ten minutes later another, or possibly the same bird, flew over and disappeared in a south-westerly direction (L.P.).

Common Redshank. *Tringa totanus totanus* (L.). Barn Elms Reservoirs, one on 12th April and 13th December (C.W. and L.P.). Two pairs nested at Island Barn sewage farm, Molesey (P.A.D.H.).

Greenshank. *Tringa nebularia* (Gunn.). Barn Elms Reservoirs, two on 23rd August (C.W.).

Grey Phalarope. *Phalaropus fulicarius* (L.). Barn Elms Reservoirs, one from 21st to 27th September (J.P.H. and F.R.F. in *B.B.*, xxiv, p. 166).

Jack Snipe. *Lymnocryptes minimus* (Brünn.). Weybridge, one on 17th April (T.H.H.).

Black Tern. *Chlidonias n. niger* (L.). Barn Elms Reservoirs, one on 30th April, two on 1st June, four on 2nd August, three on 18th August, two on 13th September, and one on 24th September (E.L.K., J.P.H., A.H.M. and G.C.L.).

Common Tern. *Sterna h. hirundo* L. Occurred in each month from May to October, one to nine at Barn Elms Reservoirs (various observers). On 4th October between 30 and 36 were present for about an hour (F.R.F.).

Arctic Tern. *Sterna macrura* Naumann. Molesey, two on 31st August (T.H.H.).

Little Tern. *Sterna a. albifrons* Pall. Barn Elms Reservoirs, two on 24th May (L.M.E.).

Black-headed Gull. *Larus r. ridibundus* L. An adult bird found dead at Barn Elms Reservoirs on 4th January had been ringed at Lake Ove, north-west Jutland, on 12th June 1927 (C.W.).

British Lesser Black-backed Gull. *Larus fuscus graellsii* Brehm. Seen at Barn Elms Reservoirs in every month except February. The peak of the autumn movement was reached on 25th August when 145 were counted (A.H.M.).

Great Black-backed Gull. *Larus marinus* L. One to two seen at Barn Elms Reservoirs in January, July and September to December (various observers). Molesey Reservoirs, on 14th and 24th December (T.H.H.).

Guillemot. *Uria aalge* (Pontopp.) ? sub-species. On the Thames just above London Bridge, see under Middlesex.

Little Auk. *Alle alle* (L.). Molesey Reservoirs, one on 1st January (D.L.L. and T.H.H. in *B.B.*, xxiii, p. 276).

Red-legged Partridge. *Alectoris r. rufa* (L.). One found dead at Barn Elms Reservoirs on 7th April by Mr Day, Reservoirs Inspector (per J.P.H.).

CORRECTIONS.

" Ornithological Records of the London Area " in *London Naturalist*, 1928 :—

p. 45. Under **Ring-Ouzel.** For " 30-9-07 to 4-10-47 " read " 30-9-07 to 4-10-07."

" Ornithological Records of the London Area " in *London Naturalist*, 1929 :—

p. 89. Under **Pink-footed Goose.** For " *B.B.*, vol. xx, p. 374 " read " *B.B.*, vol. xxii, p. 374."

p. 92. Under **Blackbird.** For " early Feb." read " early Feb., 1915."

p. 94. Under **Black-headed Gull.** For " Ashford, Midsex., 20-10-14 " read " Ashford, Midsex., 20-10-24."

p. 95. Under **Chiffchaff.** For " Mar. 28 E. Epping Forest " read " Mar. 29 E. Epping Forest."

A Note on the Wryneck.

By R. W. Robbins.

THE Wryneck (*Jynx t. torquilla* L.) is a fairly regular spring migrant in the district of Limpsfield, Surrey, and comes to the garden to feed on the ants, which are only too plentiful there. In 1930 the familiar call was first heard on April 25th. On the morning of May 3rd, looking from a window, I noticed some feathers floating down from a nestbox on the trunk of a birch tree. Others followed, and a bird's head peered from the nestbox, with a beakful of material, which was dropped outside. In this box a pair of Blue Tits had started nesting. Presently the bird in the nestbox emerged and flew to a garden seat, where I saw it was a Wryneck. After about a minute's pause, motionless on the back of the seat, it returned to the box and resumed operations, removing in a short time a good deal of material. During this time the Blue Tits were not seen. The gardener told me that a nestbox on a pergola in an adjoining garden had been similarly treated by the " Cuckoo's Mate," and that in this case eggs also had been removed.

On May 5th, two mornings later, while at breakfast, we saw the Wryneck emerge from a third nestbox on the other side of the house. This was in the occupation of a pair of Great Tits. The bird had something in its bill, and, returning a minute or two later, again came out with what appeared to be an egg. I went into the garden and, on a path about ten yards from the nestbox, found two freshly broken eggs of the Great Tit within two feet of each other. Later, I examined the nestbox, which, except for some nesting material, was then empty. The Great Tits subsequently reared a brood in this box.

The Wryneck now turned its attention again to the box on the neighbouring pergola, where the gardener later reported that the bird was sitting. Young were duly hatched, and were seen to fly on July 11th.

There are plenty of old trees providing suitable nesting sites for the Wryneck in the neighbourhood, though not in the immediate vicinity of the garden.

Behaviour of Woodpeckers at Nesting Sites, Epping Forest, 1930.

Green Woodpecker (*Picus viridis virescens* Brehm); Greater Spotted Woodpecker (*Dryobates major anglicus* Hart.).*

THE following communication results from the observations of three members of the Society. Sometimes we were together, and at other times one or two may have been present. A series of Woodpeckers' holes in an oak close to a damp ride near the verge of the woodland testifies to the tree having been a nesting site in previous years, but none of us had known a brood to have been reared there. The district is one where the Green Woodpecker is often heard and seen, and the Greater Spotted is known to have hatched out broods in a crab tree and in an ash not far away in past years.

During the Easter holidays of 1930 a Greater Spotted Woodpecker was seen at the oak tree in the ride, and a new hole was observed to have been commenced on the east side of the tree. The Green was calling in the neighbourhood. On the following Saturday (April 26th) a Green Woodpecker flew away from the bole of the tree as the three of us approached from the west. Later in the morning the Green was heard in the neighbourhood and seen in the tree. On May 3rd, tapping was heard at the tree and continued for some time. What at first was taken to be the feathered underside of a bird was seen in the hole on the east side of the tree, but close inspection proved this to be sodden wood pulp. When this was removed it was found that the hole did not enter far into the tree, and it was suspected that one of the old holes

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*An account of the Greater Spotted Woodpecker and its nesting habits appeared in the *London Naturalist* for 1925, pp. 16-20.

was being cleared out. The Green Woodpecker was about, but a wing feather of the Greater Spotted species was found under the tree.

On the dismal rainy morning of May 11th, a Green Woodpecker was twice observed at a new hole in a branch on the north side of the tree; it worked up and down the branch and partly entered the hole, the tail of the bird protruding. The Green was heard calling as the tree was approached and as it was left. On May 17th the hole on the north side was watched; a Greater Spotted Woodpecker was seen to look out of the hole and chips of wood were flicked out. The call of the Green was heard when the tree was under observation. About 7.30 a.m. on May 18th a cock Green Woodpecker was seen on the tree; he attacked both the cock and hen Greater Spotted furiously several times. The cock Green perched on the bough near the hole, flattening himself so that he was difficult to distinguish from the bark. The Greater Spotteds came to the tree sometimes together and sometimes singly, but were charged on the wing by the Green and driven away. Once the cock Green and one of the Greater Spotteds fluttered together down almost to the ground, the Greater being below the Green. The birds then broke away and disappeared. The cock Green called several times, but there was no response. No hen Green was seen. On May 25th a Greater Spotted (probably hen) was seen to look out of the hole. The call of the Greater Spotted was heard, and the other bird of the pair flew into the tree and down to the hole, but flew off. On May 29th a Greater Spotted was seen to look out of the hole; a call of the Green was heard. On June 1st, at 7.30 p.m., on returning from the Ornithological excursion, the tree was kicked and a Greater Spotted flew out. On June 9th the Greater Spotted was seen to visit the hole and apparently fed youngsters. On June 15th the hen Greater Spotted was seen to feed the youngsters twice. Later in the day they were again seen to be fed and were heard chanting. On June 16th and 21st the youngsters were heard chanting; on June 22nd they had left the nest early in the morning. A brood of Greater Spotteds that were heard chanting at High Beach on June 21st also had flown by mid-day on June 22nd.

Observation continued for years indicates that in this area the oak is not a frequent nesting site with the Greater Spotted, but it seems to be so with the Green. It is admittedly dangerous to apply human thought to the habits and actions of birds, but it would seem, judging from Starlings dispossessing Greater Spotted Woodpeckers of nesting sites, as happens in this area, that persistence rather than physical strength may be the winning factor in the fight for a nesting site. Observation shows that the Green Woodpecker is either much more shy or more wary or more cautious in visiting its nesting site than the Greater Spotted, particularly when youngsters have to be fed, and that it has great patience, but its great patience does not seem to have availed against the persistence of the Greater Spotted in the case related. It would be unwise to draw a hard and fast conclusion, because, as observation proves, birds of the same species vary in temperament.

B. T. Ward, W. A. Wright, J. Ross.

Some Notes on Robins.

By C. L. Collenette, F.R.G.S., F.E.S.

OBSERVATIONS on the Robin (*Erithacus rubecula melophilus* Hart.), notably those of Mr J. P. Burkitt in *British Birds*,* show that the bird normally occupies a " territory " during the winter months, from which any intruders are driven without delay.

I was, therefore, considerably surprised at the results of ringing during the winter of 1928-29. A certain Robin, which we will call " A," occupied the bushes surrounding the lawn on which my traps were set. It habitually perched on the larger trap, and was usually distinguishable from others by its actions and tameness, often feeding from a trap several times in a morning. On occasions it sang at some length, showing with very little doubt that it was a male.

The catch was as follows :—

	CAUGHT.	RECAUGHT.
A.	18th November 1928.	25th November, 23rd December 1928; 20th January, 17th February 1929.
B.	25th November.	6th January, and in an adjoining garden on 23rd February 1929.
C.	25th November.	
D.	25th November.	14th December 1928.
E.	25th December.	27th January 1929.
F.	30th December.	
G.	20th January 1929.	24th March.
H.	16th March.	

It will be seen that four individuals entered the traps in each of the months November to January. Bird " A " was caught once a month for verification, yet six other birds were trapped while it was presumably in charge of the territory, and no fighting or driving away was noticed.

During the following winter I was away until the middle of March. When trapping was re-started, none of the previous winter's birds turned up, but strangers had taken their places.

	CAUGHT.	RECAUGHT.
I.	16th March 1930.	23rd March, 6th April 1930.
J.	16th March.	13th April.
K.	20th April.	

Mr Burkitt states that adult birds will not enter a trap after the end of the winter, and mentions 4th March as the last date on which his traps were effective in the year he was discussing. During the summer of 1930 my own traps were regularly baited, and birds frequenting them were caught at least once a week. From 20th April to the end of August only one adult was caught, on 20th July, and that (L) was a stranger. Other adults were usually to be seen, but they took no notice of the bread bait, even when close to it.

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*Vols. xvii, pp. 294-303; xviii, pp. 97-103, 250-257; xix, pp. 120-124; 1924-25.

Young birds in their juvenile plumage exhibited very different behaviour from the adults, as the following table will show:—

BIRDS IN JUVENILE PLUMAGE.	CAUGHT.	RECAUGHT.
M.	26th May 1930.	
N.	12th June.	
O.	22nd June.	13th July 1930.
P.	27th June.	6th September.
Q.	29th June.	6th July.
R.	3rd July.	20th July.
S.	19th July.	
T.	20th July.	2nd August, 3rd August.
U.	26th July.	27th July.
V.	26th July.	27th July.
W.	4th August.	10th August, 24th August.
X.	4th August.	

In addition to the above, three young birds were ringed in 1930 as nestlings in this territory. One was found drowned in a water tank a few days later, but the other two were not seen again. This, in conjunction with the twelve juveniles in the table, illustrates the wandering habits of the young before they have taken up their own territories.

At first sight it would appear that young birds will enter a trap which adults will avoid with suspicion, but this is improbable, for little hesitation is shown by the adults during the winter, and their behaviour is the same when food has been thrown down on open grass. It would seem that juveniles have not sufficient experience to find adequate insect food, and, therefore, adopt a more general diet.

The Gall of Andricus seminationis.

By J. Ross.

THE gall caused by *Andricus seminationis* Adler is of particular interest because its development has two stages, and its later development can be awaited and watched. *A. seminationis* is a species of the Hymenoptera, of the family Cynipidae, some of which have alternating generations, one generation being sexual and the other agamous. Only the agamic form of *A. seminationis* is known, and Cameron (*British Phytophagous Hymenoptera*, iv, p. 101) says the insect is not distinguishable from *A. quadrilineatus* Htg., which he states (p. 95) cannot be separated by any tangible characters from three other species of *Andricus*.

The fly, according to Adler (*Alternating Generations*, p. 89) lays its eggs in the buds of the Oak, and the galls may occur on the male catkins or on leaves. I have never found the gall on leaves, and these remarks apply only to galls on catkins. The authorities say that catkin stems bearing the galls are often abnormally thickened: I have not found the gall on a catkin stem that is not so thickened. When the catkins are quite fresh it is possible to find some which are thickened, and I regard the thickening as the first stage of gall growth. The thickened catkins can be watched, and the appearance and development of the fusiform gall, from which the fly will emerge, can be followed.

The swelling of the catkin stem varies considerably, and only a comparatively short part of the stem may be affected; in such an instance the part of the stem above the swelling shrivels, but it may persist. In 1929 and 1930 galls occurred on Oaks, *Quercus Robur* (*pedunculata*), bordering or near to four damp open plains in the Chingford district of Epping Forest. These Oaks flowered profusely in both years, and on one tree on which the galls occurred in both years, they were plentiful in 1930.

Cameron and Adler in the works cited are primarily concerned with the flies, but Connold (*British Oak Galls*, p. 95) says that the gall may be sought in May and June, and that the thickened catkin stems remain on the twigs all the summer. Both in 1929 and 1930 some thickened catkin stems on the trees mentioned persisted until November, and on one tree two such stems galled in 1929 remained until the following May, when I collected them. I also gathered fresh swollen catkins from the same tree at the same time, and exhibited both at a meeting of the Society. Not only do the swollen catkin stems persist considerably longer than Connold stated, but they continue to produce definite galls until late in autumn. In 1929 and 1930 galls were found on the swollen catkin stems as late as November. In each of these years the galls were appearing over a period of at least five months.

Weather conditions probably have some effect on the persistence of the swollen catkin stems and in retarding the appearance and growth of the galls. Some of these seem to develop more quickly than others. We know that some species of the gall-making Cynipidae vary in the period (one, two, or three years) that elapses before the perfect insect emerges; in these cases there is a prolonged period of quiescence in some part of the insect's development. It would seem from the period of five months during which the galls of *A. seminationis* appear that there is a varied period of quiescence in the development of these insects, and that it occurs before the stage causing the growth of the actual gall on the swollen catkin stem is reached. Galls may also appear on the same catkin stem at considerable intervals, but I have seen four galls in different stages of growth on one catkin stem at the same time. In the case of swollen catkin stems that persist and remain green through the winter, it may be that some cause of excitement or irritation is present; if these stems are much swollen they become woody in texture by about the month of November.

Some of the Oaks in Epping Forest suffer badly from the ravages of Lepidopterous larvae; these trees put out a new crop of leaves which are frequently attacked by a mould. This mould may be found on the gall of *A. seminationis*, and it seems possible that the tree in producing new leaves may retard the development of *A. seminationis* galls from catkin stems. Dry weather seems to retard the appearance and growth of the galls. Swollen catkin stems that persist and are exposed to the sun may become reddish. A much greater proportion of swollen catkin stems persisted and produced galls during October and November 1929 than in these months of 1930; weather conditions may have caused this. Two much swollen catkin stems of 1930 that had produced galls and still seemed promising in October disappeared in that month, the twig carrying them being broken off; it may have been collected or a cow or a deer may have eaten it.

Galls of *A. seminationis* (or galls that I take to be such) vary considerably in shape. I have seen some with very long stalks. Galls that appear in autumn are often stunted and sometimes curved. Adler describes the gall as either stalked or sessile; I do not see how a sessile gall appearing, say, in June is to be distinguished from *A. quadrilineatus*. If a sessile gall developed in August or September on a swollen catkin one would conclude it to be caused by *A. seminationis*. Connold tells us that the gall of *A. quadrilineatus* often occurs on the same catkin as those of *A. seminationis* and *Neuroterus baccarum* L. This does happen, and the fact raises possibilities of awkward complications.

Some Gall-causing Trypetidae.

By M. NIBLETT.

An interesting group of gall-causing insects are the Trypetidae, a family of flies belonging to the sub-order *Cyclorrhapha*. They have a stoutish body and pictured wings, the markings usually being arranged in the form of bands of colour, from which they take their popular name "bar-wing." The females are provided with a flattened horny ovipositor, which, in some species, is of greater length than the insect itself.

The British species number about 70, but of these probably not more than a dozen are gall-causers. A few species cause stem galls, but the majority affect the flower-heads of Compositae, their galls being invisible externally as a rule, and consisting of a hardening and thickening of the ovaries.

The larvae are short, fat, barrel-shaped maggots, white, grey, pale yellow, or pinkish in colour; those of the gall-making species pupate in the galls, but many larvae of other species leave the food-plant when full-fed and pupate in the earth.

The pupa is of the typical Muscid type, and varies in colour from light yellowish-brown to black. The pupal stage is short, the majority hibernating in the larval state.

Euribia (*Urophora*) *cardui* L., a very handsome fly, is the cause of large swellings upon the stems of *Cnicus arvensis* Hoffm. These may be found from August onwards; usually the galls are very plentiful upon plants growing in damp situations. The fly appears to confine its attacks entirely to *C. arvensis*; I have repeatedly searched other species of thistles growing in close proximity to the heavily galled plants of *C. arvensis*, but have failed to find any with *E. cardui* galls upon them. I have had the flies emerge from the galls from June 22nd until July 7th. The larvae are parasitised to some extent by Chalcids, but are not, as far as my experience goes, severely attacked.

Euribia solstitialis L. is one of the commonest of the gall-causing Trypetids; it is formed in the flower-heads of *Centaurea nigra* L., and it is rare to find a patch of the Black Knapweed without a few of the plants attacked. I have found this gall with young larvae in, on July 7th, and they may be found from this date onwards. The flies emerge from the galls from the middle of May to the beginning of August, the majority coming out in June. Another Trypetid, *Euribia* (*Urophora*) *quadrifasciata* Mg., I have bred in some numbers from galled flower-heads of *C. nigra*, but have been unable up to the present to determine whether it induces gall formation or not. *Chaetostomella onotrophes* Lw. also emerged from these flower-heads, but this species is probably not a gall-causer. These galls also yield as a rule parasites in quantity, Chalcids chiefly; one species, *Eurytoma curta* Walk., I have had emerge in about the same numbers as *E. solstitialis*, a fact which has caused me to question its being parasitic; this is a point I hope to investigate.

Tephritis bardanae Schrk. affects the flower-heads of *Arctium majus* Bernh. This fly does not seem to occur so frequently as the previously mentioned species, but I have usually found it plentiful where it does occur. I have found the galled heads in August, the flies emerging from them during September. This raises a rather interesting point. What happens to the flies until the Burdock plants flower in the following summer? It seems hardly possible for the flies to survive over such a long period. Can it be that there is an alternate host plant?

Noeëta (*Carpotricha*) *pupillata* Fall., which causes galls in the flower-heads of Hawkweeds (several species of *Hieracium* are, I believe affected), does not seem to be very widely distributed, as far as my experience goes. I have found the galls from September to November, from which the flies emerged at the end of April. Here is another instance of a fly emerging a long time before its host plant is ready for the reception of its eggs; not so long as with *Tephritis bardanae*, but at least several months before the Hawkweeds begin to flower. It has suggested itself to me that the fly may possibly lay its eggs upon some other part of the plant, the larvae migrating to the flower-heads when these are in a suitable condition to receive them.

Examination of a number of flower-heads of *Carduus nutans* L. disclosed the fact that some of them contained a large, hard, woody gall, inhabited by numerous Trypetid larvae. The flies emerged from these galls during June, and were found to consist of two species, *Terellia serratulae* L. and *Euribia stylata* F. Whether both species induce gall formation in this plant I have yet to determine.

Flower-heads of *Onopordon Acanthium* L. were found to contain woody galls similar to those found on *C. nutans*, but rather smaller. These galls contained white Trypetid larvae, and may prove to be caused by the same species.

Flower-heads of *Cnicus palustris* Willd. were also examined, and one head out of about 50 was found to contain two Trypetid larvae, each in a separate cell.

Flower-heads of *Cnicus arvensis* Hoffm. were found with Trypetid larvae in them; here the stem just below the flower-head was slightly swollen and distorted.

Old flower-heads of *Centaurea scabiosa* L. gathered in January yielded a number of specimens of *Orellia colon* Mg., these emerging during June; a fly of the same species emerged on August 10th, from flower-heads gathered during July.

A number of misshapen and rather distorted heads of *Hypochoeris radicata* L., collected on July 5th, yielded numerous specimens of *Tephritis vespertina* Lw., these emerging on July 16th.

In July I found a very distorted flower-head of *Tragopogon pratense* L. from which emerged in August two Trypetid flies, species undetermined.

Whether it is legitimate to call the last four mentioned species of flies, Gall-flies, is perhaps open to question, but there was some evidence in each case of a certain amount of distortion of the plant.

There are a number of other species of Trypetids causing galls, but these I will not touch upon, having had no personal experience with them.

The chief item of interest in connection with these flies, and one I think worth further investigation, is the emergence of some species at a time when there is little chance of them finding flower-buds to oviposit in within a reasonable time. With *Orellia colon*, *Tephritis vespertina*, and the flies from *Tragopogon pratense* there is the possibility of them being double-brooded. But this does not seem to be probable in the case of *Tephritis bardanae* and *Carpotricha pupillata*, although the capture of the former insect in June has been recorded. I would like to point out that all the flies mentioned were reared under exactly similar conditions, the material from which they were bred being kept in glass jars upon shelves fastened to the walls of a wooden shed.

In conclusion, I would like to say that the foregoing notes are offered simply as a record of my personal observations of the various species mentioned, with the hope that some of them may prove of interest.

My best thanks are due to Mr O. W. Richards for naming some of the species for me.

Cynipid Oak Galls in Surrey during 1930.

By M. NIBLETT.

THE following notes with reference to oak galls are compiled from observations made during the year 1930. They are not so complete as I should have liked them to be, but bad weather and other obstacles prevented me from doing as much field work as I had hoped.

Andricus aprilinus Giraud I failed to find in any quantity, although I paid several visits to one station where the galls are usually much in evidence. On May 31st I found *A. nudus* Adler very plentiful upon the catkins of *Quercus sessiliflora*, and galls of *A. amenti* Giraud were just showing on the same oaks. *A. solitarius* Fonsc. I could only find in small numbers on *Q. sessiliflora*, and less still upon *Q. Robur*. Galls of *A. glandulae* Schnk. on *Q. sessiliflora* were found in fair numbers, but were, I think, later than usual. Galls of *A. globuli* Htg. were very plentiful upon the same oaks, although those of the alternate generation, *A. inflator* Htg., were not much in evidence; this may be accounted for by the fact that the insect does not emerge until the second spring after the formation of the gall. *A. radicis* F. I found in fair numbers on both oaks, but it did not appear to be as plentiful as in other years. *A. callidoma* Htg., on *Q. Robur*, I found in small numbers scattered over a very wide area. A closer search would have no doubt revealed many more galls. Galls of *A. quadrilineatus* Htg. I should say were not quite so plentiful as usual, but were met with in fair numbers on both *Q. Robur* and *Q. sessiliflora*.

A. fecundator Htg. I saw in greater quantity than I have ever observed before, both oaks being about equally affected. *A. collaris* Htg. I found rather sparingly on both oaks, and *A. curvator* Htg., its alternate, in fair numbers. Galls of *A. ostreus* Giraud on both oaks were found in good numbers, but I did not find them plentiful until late in the season.

Acorns of *Quercus Cerris* were found in some numbers attacked by *Callirhytis glandium* Giraud.

Cynips kollari Htg. as usual was found in quantity, but I found many galls in their green state up to the end of October.

Dryophanta folii L. I found very widely distributed, not in any great numbers, but in a number of localities in which I have failed to find it before; I also found a number of galls of its alternate, *D. taschenbergi* Schl., in one area; the gall of this species is probably more plentiful than it appears to be, for it is certainly not easy to find. *D. disticha* Htg. was fairly plentiful upon *Q. sessiliflora*. *D. divisa* Htg. was found on both oaks in very fair numbers spread over a wide area. D. *longiventris* Htg. was also well distributed and in numbers I think above the average. I found quite a number of the galls at the end of October.

Neuroterus fumipennis Htg., in one area, was found to be plentiful on *Q. Robur*. *N. tricolor* Htg., the alternate generation, also occurred in the same district in considerable numbers. *N. numismalis* Oliv. was fairly plentiful on both oaks over a wide area, but could only be said to be abundant in a few spots; *N. vesicator* Schl., its alternate, appeared to be widely distributed, but not over abundant. *N. lenticularis* Oliv. as usual was to be found everywhere, but was, I thought, rather late in appearing in any quantity; *N. baccarum* L., the alternate form, was also plentiful in the spring, but I did not find so many galls upon the leaves as usual. Galls of *N. laeviusculus* Schnk. I found in good numbers on both oaks, but these also were, I think, rather late in appearing.

Biorrhiza pallida Oliv. was very plentiful on both oaks, but many of the galls met with were very much undersized. *B. renum* Htg. in one area was fairly plentiful, but rather late in appearing, even for this late gall.

Taking the season as a whole, I should say that it was a pretty fair average one for oak galls. Quite a number of species of galls I did not see myself, but these I might have overlooked, or I was not able to get out when they were on. One species I did look for a good deal, but failed to find, was *Andricus albopunctatus* Schl. The apparent scarcity of many galls may, I think, be put down to their rather late appearance in the case of the autumn ones, and to their falling rather quickly in the case of the spring ones. One reason for this, I would suggest, was that the oaks, in many districts, were badly affected by mildew.

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London Natural History Society.

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